Ghana

Pharmaceutical Pricing Study

Policy Analysis and Recommendations

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DELIVER

DELIVER, a five-year worldwide technical assistance support contract, is funded by the Commodities, Security, and Logistics Division (CSL) of the Office of Population and Reproductive Health of the Bureau for Global Health (GH) of the U.S. Agency for International Development (USAID).

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Recommended Citation

Sarley, David, Hany Abdallah, Raja Rao, Joycelyn Azeez, Peter Gyimah, and Bertha Garshong. July 2003. *Ghana: Pharmaceutical Pricing Study, Policy Analysis and Recommendations.* Arlington, Va.: John Snow, Inc./DELIVER, for the U.S. Agency for International Development.

Abstract

The clear guidelines that exist for pharmaceutical pricing in the public sector health commodity distribution system should encourage equity of access. Decentralized procurement decision making combined with inadequate management supervision has resulted in large variations in the prices of essential medicines across and even within different regions in Ghana. Decentralization without proper monitoring has also increased irrational drug use. This has been further exacerbated by stockouts at the Central and Regional Medical Stores. Patients are consequently paying more for their drugs while related delays in the reimbursement of exemptions has led to the decapitalization of the revolving drug funds. All these factors could seriously undermine the sustainability of the planned introduction of the National Health Insurance scheme. Policy recommendations are presented to address these difficulties and contribute to improved product availability and security for essential medicines.

Ministry of Health/Ghana Health Service

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Acronyms

AIDS	acquired immune deficiency syndrome
AR	Ashanti Region
BAR	Brong Ahafo Region
C&C	cash-and-carry
CHAG	Christian Health Association of Ghana
CMS	Central Medical Stores
DANIDA	Danish International Development Agency
DMS	District Medical Stores
EML	Essential Medicines List
FP	family planning
GAR	Greater Accra Region
GHS	Ghana Health Service
GMOH	Ghana Ministry of Health
GNDP	Ghana National Drugs Program
GOG	Government of Ghana
GSS	Ghana Statistical Service
HP	health post
ICB	International Competitive Bidding
IRS	Internal Revenue Service
IT	information technology
JSI	John Snow, Inc.
KB/CMS	Korle-Bu Central Medical Stores
MHO	Mutual Health Organizations
MOF	Ministry of Finance
MOH	Ministry of Health
NGO	nongovernmental organization
NHI	National Health Insurance
ORS	oral rehydration salts
PHRplus	Partners in Health Reform Plus Project
RDF	revolving drug fund
RDHS	Regional Director of Health Services
RDU	Rational Drug Use
RH	regional hospitals
RHA	Regional Health Authority
RMS	Regional Medical Stores
RPM plus	Rational Pharmaceutical Management Plus Project
SDP	service delivery point
SPA	Service Providers Assessment
SSDM	Stores, Supplies and Drug Management
STG	standard treatment guidelines
UER	Upper East Region
USAID	U.S. Agency for International Development
UWR	Upper West Region
UWRDP	Upper West Regional Drug Program
WHO	World Health Organization

Acknowledgment

All the authors owe a huge debt of gratitude to Samuel Boateng, Director of Stores Supplies and Drugs Management MOH and chief project counterpart, and to Parfait Edah, DELIVER resident advisor. Mr. Boateng provided the insight, wisdom, time, and patience to work with the DELIVER team over a long period, from initial conception to final implementation and presentation. Mr. Edah provided the logistics and organization support to ensure the challenging work could happen. Thanks also to Johnnie Amenyah who provided advice during a very difficult time, and thanks to several DELIVER colleagues, Barbara Felling, Becky Copeland, and Greg Roche who provided ideas and suggestions at various times. We could not have entered all the data we collected without Larry Bailey, and we would not have needed to reenter it if we had given him more time with the program design! Thanks, of course, to all the many health managers in the CMS, RHA, GHS, MOH, RMS, SDPs, and private sector facilities who took time to share their thoughts, ideas, and data with us. None of this would have been possible without you.

Penultimate thanks to Maggie Huff-Rouselle for her initial thinking and field work. Finally, of course, none of this would have been possible without the funding of USAID and the strong technical commitment of Usula Nadolny and Laurence Darko.

The authors accept responsibility for any errors, omissions, or misrepresentations.

Executive Summary

Background

Why Was a Pharmaceutical Pricing Study Required?

Ghana has a long tradition of innovation and reform in the organization and delivery of its health services. The planned introduction of the National Health Insurance Fund (NHIF) follows earlier efforts to decentralize health service and drug management. The NHIF will replace the cash-and-carry system for financing health services medicines while maintaining local facility autonomy in managing their revolving drug funds (RDF). This autonomy increased local management's discretion over drug procurement and pricing, within clear guidelines. These guidelines state that public facilities should buy first from the public sector and should mark up at a fixed 10 percent margin for Regional Medical Stores (RMS) and for service delivery points (SDPs). The MOH/Ghana Health Services (GHS) has been receiving reports of noncompliance with these guidelines within the public sector. RMS and SDPs have reportedly increased their procurement from the private sector while the considerable variation in drug prices indicate margins in excess of 10 percent.

To examine these issues and determine options for a more efficient, effective, and equitable pharmaceutical pricing policy, a joint MOH/GHS and DELIVER team were commissioned to conduct a detailed pricing study. A team of six experts surveyed 67 public and private sector facilities in all ten regions in Ghana, visiting facilities at the central, regional, and local level. The team tracked procurement and sales information for 35 tracer drugs through the public distribution system, and attempted to compare international prices and the private distribution system.

Procurement

What Drives Decisions Other Than Price?

As a whole, RMSs bought, on average, 54 percent of their medicines from the private sector; with some regions buying significantly more: Ashanti (80 percent), Volta (65 percent), and Eastern (66 percent). At the SDP level, facilities still tend to buy the majority of their supplies from their respective RMS. However, these increasingly come from the private sector.

Facilities quoted a number of reasons for prefering private sector sources of supply: lower prices, better quality and availability, and packaging. Only 45 percent of RMSs said they tried to adhere to the *public sector first* procurement policy. The lack of available essential medicines (EML) list items and non-EML prescribing patterns were identified as key reasons for procuring from private sector sources.

More detailed analysis of the price information does not entirely tally with what respondents reported on Central Medical Stores (CMS) prices. A comparison of CMS purchase prices with international prices confirms earlier findings in 1993 that the CMS is procuring at well below international prices, economizing through its bulk orders. While the comparisons are not perfect and data was not always available, the average CMS price was estimated to be 54 percent the value of international prices for the drugs compared. This analysis cannot confirm the quality of the drugs procured through the CMS. For three items, ergometrine, methyldopa, and water for injection, the CMS price was higher than the international price.

More detailed analysis of RMS purchase records identified four drugs that appeared to be cheaper from the CMS than the private sector: benzyl penicillin, ergometrine, gentamicin, and mebendazole. For these drugs, buying from the private sector appears to be rational in terms of cost but this does not appear to be true for 20 out of 35 tracer drugs that were bought exclusively or partly from the private sector by either or by both a majority of SDPs and RMSs. For many of these drugs, the CMS appears to be significantly cheaper. Other factors are also at play including, but not limited to, the availability and quality of products at the CMS. This suggests that the *buy public first* policy is not working either because RMS and SDPs are ignoring it, or stockouts or poor quality at the CMS and RMS, respectively, have forced them to buy from the private sector.

Decentralized Decision Making

How Has It Contributed to Price Variations?

Combining price information from different levels of the public distribution system highlights the consequence of decentralized pricing and procurement decision making. While sales prices from the CMS are usually relatively uniform, with small variations usually due to differences in the timing of sales, RMS and SDP sales prices vary considerably across regions. For some drugs, these differences are as high as 100 percent between regions, i.e., amoxycillin suspension in a public SDP could cost twice as much in Greater Accra as in the Upper West.

A limited comparison between private wholesale and CMS prices indicated that one wholesaler was, in fact, cheaper for half the products where data were available. For another smaller wholesaler, they were only cheaper for one out of thirteen products.

In many SDPs visited, managers said they set their prices slightly below those they observed in local pharmacies because they thought this is what patients would be willing to pay. This commerical pricing behaviour is undertaken on the assumption that those unable to pay would be entitled to exemptions. This observation has two important implications. First, if the high prices being charged at SDPs are reflective of local market conditions and the resulting margins are far greater than the cumulative 45 percent technically allowed by the public sector, then it suggests that private sector margins are themselves far higher. Second, part of the problem with exemptions claims and reimbursement may be related to drugs being priced too high at the SDP.

Actual Margins

How Do They Exceed Official Levels and Increase the Consumer's Cost?

The official policy on margins allows a cumulative 40–45 percent margin to be charged on medicines procured through the public sector system. This is made up of a 20–25 percent margin (depending on source, e.g., local or International Competitive Bidding [ICB]) at the CMS and 10 percent at both the RMS and SDP. As the prices show, cumulative margins observed in the public sector distribution greatly exceed these levels. Awareness of official mark-up policy was mixed. While the majority of facilities claimed to be aware of the official mark-up policy, it was clear that a majority of the health staff in these facilities did not follow it. Most of the facilities surveyed also indicated that they use their margins on drugs to cover costs other than for purchasing drugs. Payment of transport; purchase of computers, air conditioners, and packaging materials; and payment of some staff overtime were all cited as being covered to varying degrees by margins.

Private sector margins vary considerably from 10 to 100 percent and seem to be a function of local levels of competition and consumer ability and willingness to pay. Most, but not all, of the private facilities surveyed vary margins by drug, based on the products value and how long it usually sits on the shelf. Slow moving and cheaper items tend to be marked-up with higher margins than high-value, slow-moving items.

CMS margins show a surprising level of variation, with some products being marked up more than 100 percent. Some products actually appear to be sold for marginally less than the purchase price. CMS indicated they did this to clear almost expired stock. While some of these variations may be due to invalid comparisons over time, it seems that the CMS itself is not strictly adhering to its 20 percent margin rule. Analysis of their accounts suggest that they made a gross margin of 27 percent in 2001 and a net margin, after operating costs, of 7 percent. The gross margin provides the revenue to cover overhead costs while the net margin is the remaining amount after overhad costs are paid. We believe the CMS can reduce their margins and still retain a positive net margin for future reserves, particularly where inflation has been reduced to a single digit.

Average RMS margin levels exceed the prescribed 10 percent level in each region surveyed. Furthermore, considerable variation in margins were observed for the same drugs sold by different RMS. For example, oral rehydration salt (ORS) sachets were marked up between 40 percent in Upper East and 7 percent in Western Region, while gentamicin was marked up by 60 percent in Northern and Upper East but only 11 percent in Upper West. Multivitamins were marked up by 100 percent in the Upper West while Western region marked them up approximately 5 percent.

These high and variable RMS margins create a backlash effect in increasing regional differences in prices at SDPs while increasing the cost to the consumer, undermining the purchasing power of both SDPs and patients, and encouraging SDPs away from the public sector. Considerable variation was also observed in the margins charged by SDPs for different drugs and between SDPs in different regions.

Accountability

How Does This Affect National Policy and Local Communities?

The combined effect of the CMS, RMS, and service delivery point (SDP) margins is a substantial increase compared to the cost to the patient of drugs purchased through the public system. In the eight regions where detailed information at the SDP was available, the cumulative public sector margin exceeded 100 percent in comparison to the official level of 45 percent. For some products in some regions, the cumulative margin exceeds 300 percent. There is widespread disregard for the official policy while local communities are being charged considerably in excess of the prices they should be charged by public facilities. Examination of the costs of distribution do not justify such high margins.

Margins

How Do Inflation and Cash Flow Management, Not Distribution Costs, Drive Them?

At the RMS level, a calculated margin of 22 percent would cover the estimated costs of transportation, including vehicle depreciation and warehousing, and provide a budget for the necessary support in providing office equipment. If transportation were provided by the CMS, a margin of 12 percent would be sufficient; margins must also provide a reserve for stock losses and

inflation. Estimation of necessary inflation adjustment margins depends on the length of repayment by creditors as well as the inflation rate. With a monthly inflation rate of 2.5 percent, for example, a three-month payment delay by half the SDPs buying from an RMS would require that an inflation adjustment factor of 3.8 percent be added to margins. These estimated distribution costs and inflation factors are less than the observed margins charged at the Upper East RMS of 52 percent, 37 percent in Brong Ahafo, and 35 percent in the Northern region.

Weak Management

Does It Contribute to Pharmaceutical Price Variations?

One of the factors contributing to higher margins is the decapitalization in revolving drug fund (RDF) caused by late and incomplete payment of exemption reimbursements. Reasons for delayed reimbursement are mixed and include slow and improper submission of reimbursement requests by SDPs. Higher than budgeted rates of exemption disbursement also resulted in budgets being exceeded at the regional level, so the regional health authority (RHA) were unable to reimburse all the claims made by SDPs. In the Volta region, management of exemptions involves monitoring and evaluation of exemption reimbursement claims from SDPs to identify possible errors and excesses. Elsewhere, exemption reimbursement management is less well organized, contributing to SDP-level RDF decapitalization, exacerbated by SDPs and RMS charging higher than allowed margins.

The problems with the management and reimbursement of exemptions represent an important weakness that will undermine the implementation of the NHIF. Indeed, problems were reported with reimbursement of service cost claims by several facilities in Ashanti who had participated in the NHIF pilot.

Three key strategies were identified for managing RDF decapitalization: (1) negotiation and communication with suppliers to obtain credit lines; (2) procurement based on cash available rather than actual demand; and (3) financial management strategies, such as increasing margins on drug sales, avoiding high interest credit lines, managing debt recovery more strictly, and better supervision. One factor keeping SDPs within the public system appears to be that most could still gain credit from their respective RMS while private suppliers operated on a cash basis only.

Better monitoring and supervision is required across the board by the RHA of SDP exemption payments to patients and by the RMS of SDP payment for supplies. The management models adopted in the Volta region could be rolled out and adopted in other regions, which would require training in data collection and analysis, establishment of financial controls, as well as their reinforcement.

A number of policy options have been identified and need to be considered.

CMS Management and Costs and Margins

Short-term (next six months):

- MOH/GHS should define and agree on a set of performance improvement targets with the new management committee for the CMS. These should include financial targets for gross and net margins and a reduction of operating costs.

- Average gross margins should be reduced to less than 20 percent with margins on offshore supplies purchases through ICB falling below 20 percent and those on local purchases below 5 percent.

- MOH/GHS should outline and define modalities under which the CMS is allowed to supply to the private sector. These could include the option to charge higher margins. However, sales to the private sector should not risk the availability of EML items for the public sector.

Medium-term (next two years):

- The management committee will need to design and implement a plan for reducing its cost structure and improving the efficiency of its operations. Among others, the CMS needs to make improvements in the customer focus of the CMS.

- Estimate the cost of subsidy for anti-snake serum and anti-rabies vaccine and obtain payment from MOH/GHS.

- MOH/GHS should evaluate performance and define appropriate sanctions or rewards using the agreed-upon performance targets.

RMS and SDP Margins

Short-term:

- RMS and SDP margins should be officially increased from the 10 percent, initially to 15 percent. MOH/GHS should actively monitor drug prices to ensure compliance with official policy.

Medium-term:

- RDF will need to be reviewed and recapitalized in line with planned drug budgets. Transactions should move to a cash, not credit, basis between RMSs and SDPs and RMS and CMSs to reduce the cascading debt situation that has contributed to decapitalization.

- Improved management and greater certainty of exemptions (see next section) should reduce payment delays and reduce the need for large inflation adjustments.

ICB Procurements and Product Quality

Short-term:

- MOH/GHS should take steps to consolidate the relatively better prices achieved through ICB procurements, and improve the quality or perception of quality of its products.

- GNDP should be institutionalized within the MOH/GHS and agree upon a clear commitment and budget for its work on rational drug use and drug education.

Medium-term:

- There is no doubt that the inability to accurately forecast annual requirements and to plan the procurement of these through ICB undermines the gains of lower prices through top-up procurement.
- Efforts should be made to improve the forecasting of requirements to ensure that local top-up procurement are reduced, if not completely eliminated.
- The perception of lower quality, though unproven, undermines the credibility of the CMS and its lower-level clients. The quality assurance systems of the procurement process need to be enforced and publicized to its clients.

MOH/GHS Cash Flow and Budgeting

Short-term:

- Immediate steps should be taken to improve the financial management at all levels of the supply chain. The current management of credit facilities extended to each lower level within that system, and the huge balances of outstanding accounts receivables has, no doubt, affected the ability of the stores and supplies system to meet its mandate effectively and efficiently. An immediate evaluation and assessment of the debt aging structure will be helpful in formulating a clear policy on credit sales for each level.

Medium-term:

- The financial sustainability of each level of the supply system should be analyzed and documented to determine the need for recapitalization, if any, or the need to reallocate funds within the system from levels or facilities with huge idle cash balances to the financially distressed facilities.
- A template for reporting financial performance at all levels of the supply system for monitoring and evaluation, as well as supervision, needs to be developed and implemented.
- Document, disseminate, and organize training for RHA in the Volta management model.
- Agree on exemption budgets and define operational guidelines for implementing exemption policy.
- To ensure the integrity of commodity supply funds at each level, improve the budgeting of planned activities and obtain the needed resources or budgets.

Accountability

Short-term:

- The MOH/GHS will need to discuss and agree with the Regional Directors of Health concerning the right balance between decentralized decision making and establishing accountability for decision making and responsibility for outcomes. Given initial negative feelings expressed at the Health Summit, a workshop event will be required to build concensus and find a way to balance different view points.

- The output of the workshop would be agreed upon and the defined roles and responsibilities, levels of accountability sanctions, and rewards for each level of the health system.

Medium-term:

- Regional and district health managers will need to report to the central and regional authorities, respectively. Accountability would also need to be defined at both the regional and district level to local community groups.

1. Introduction

1.1 Background

This report is based on intensive fieldwork undertaken in Ghana by a joint Ministry of Health (MOH)/DELIVER team from 17 February to 7 March 2003. During the end of March and early April, MOH team members undertook subsequent fieldwork. This report represents the culmination of a consultative process that started in April 2002 and involved several rounds of discussions and preparation. A methodology paper prepared by DELIVER, with support from the MOH, guided the approach. The role of MOH staff has been crucial in the work, ensuring that it is based on local realities, reflects local needs, and is acceptable to local policymakers.

Like many other countries in sub-Saharan Africa in the 1980s, Ghana adopted economic structural adjustment policies, including the introduction of selected cost recovery initiatives in the social sectors. In the health sector, Hospital Fees Legislation was introduced in 1985, and, in 1992, the cash-and-carry (C&C) system for pharmaceutical supply to outpatients throughout the MOH system was introduced (Asenso-Okyere et al. 1998).

The C&C system was inspired by structural adjustment programs and the "Bamako Initiative," spearheaded by UNICEF and implemented in many developing countries, especially Africa. The initiative was based on the theory that charging for drugs would help finance and, therefore, improve the delivery of primary health care services. The scarcity of pharmaceuticals in Ghana's public sector had led to the organic development of pharmaceutical fee schemes within many MOH facilities, and the idea of improving pharmaceutical supply throughout the system with financing from user fees was easily accepted.

Within the C&C system, each MOH facility was expected to have a self-financing revolving drug fund (RDF) by resupplying the products with the revenues from the sale of pharmaceuticals. There are a series of RDFs cascading down each institutional level within the MOH. There is a large RDF at the Central Medical Stores (CMSs) level, 10 smaller RDFs in each of the Regional Medical Stores (RMS), and RDFs in every hospital and service delivery point (SDP). At each level of the system, the facility usually marks up the basic purchase price paid for a product. As originally envisioned, these mark-ups were intended to cover the cost of repurchasing the products, including allowances for losses, inflation, duties (at the CMS level), and costs directly related to products, such as insurance and casual labor for handling. Fixed percentages for mark-ups at each level were established by the MOH. However, actual practice has often deviated from these official MOH mark-ups, and the official policies have changed over time. However, the changes were not clearly documented or communicated.

Nevertheless, the MOH has been concerned about the impact of fees for pharmaceuticals on equity and access to health care for the poor. This concern culminated in the MOH announcing the introduction of a National Health Insurance (NHI) scheme in 2002. A key purpose of the NHI is to share the risk and burden of pharmaceutical and health services costs across the population and, therefore, improve equity of access.

A crucial component in establishing the NHI will be the definition of a pharmaceutical reimbursement price list. The present study will help define how prices should be reimbursed by the NHI fund at each level.

1.2 Scope of Work and Objectives

The pharmaceutical pricing policy should reflect the core objectives of the health component of Ghana's Poverty Reduction Strategy:

- Bridging *equity* gaps in the access to quality health and nutrition services.
- Ensuring *sustainable* financing arrangements that protect the poor.
- Enhancing *efficiency* and service delivery.

If these objectives are met, then we would expect product *availability* to be ensured at SDPs for the population that need them.

Table 1 lists the objectives of the pricing study, which are to provide MOH policymakers with a clear understanding and recommendations:

Table 1. Pricing Study Objectives

Study Objective	Link to GPRS Objectives
How margins should be set at each level.	Efficiency
What these margins should cover.	Sustainability
Improving the efficiency of the public supply systems based on comparisons with the private sector.	Efficiency
Recognizing the impact of pricing incentives on distributor behavior including SDPs.	Efficiency
Ensuring products are affordable at all levels.	Equity
Ensuring products are available at all levels	Availability

It is expected that the results of this study will inform policy and operational decisions to ensure a more efficient, sustainable supply chain for the MOH and funding under NHI. The study will identify the relationship of prices between the various tiers of the system, specifically—

1. Comparing private sector wholesale and retail prices (including both NGOs and commercial establishments) with those for purchases and sales at sample MOH facilities.
2. Documenting the percentage of private sector purchases at sample MOH facilities.
3. Examining the level of price mark-ups at sample MOH facilities, at various levels of the supply systems.
4. Assessing the current availability of key health commodities at a sample RMS-level facility.
5. Assessing the current perception of the quality MOH drugs and supplies.
6. Comparing the pricing of international and domestic prices of a sample of drugs.

To help the MOH formulate improved pharmaceutical pricing polices, policymakers should understand the following:

- How actual pricing practices have evolved at different levels of the MOH system, both according to those who established the prices (qualitative data) and according to a quantitative analysis of records.
- Why prices have evolved—the ideas and attitudes that underlie pricing practices at different levels in different facilities.
- The impact of marked-up prices (from higher-level facilities) on the buying behavior at the facility level, especially when the mark-ups tend to encourage buying from the private sector rather than the next level of the series of RDFs within the MOH system.
- The degree that mark-ups are providing sufficient funds to resupply the system at each level and in each facility, including devaluation/inflation and other directly related costs (but only calculating a *reasonable* margin for losses).
- The percentage of products (in monetary terms) purchased from the private sector in different facilities at different levels of the MOH system.
- How MOH prices compare with local manufacturers and wholesalers.
- How MOH prices compare with Mission-run and private facilities at different levels of the system.
- The proportion of exemptions made at the SDP and the degree to which those exemptions are reimbursed through MOH subsidies, including the related costs that mark-ups are intended to cover.
- The impact of exemptions/subsidies on the RDFs at the SDP level and the overall financial viability of the RDFs.
- If exemptions and subsidies are being targeted effectively to improve access and equity.
- The MOH provider's sensitivity about the number and the related cost of items they prescribe to patients who must pay for pharmaceuticals.
- The relative importance of individual product price in a potential client’s decision making about whether or not to use the MOH system, as opposed to the total cost of treatment.

The remainder of this paper is organized as follows:

Section 2 is an overview of the survey methodology adopted for the collection of information on pharmaceutical prices.

Section 3 is an overview of the health situation and the pharmaceutical distribution system in Ghana.

Section 4 looks at the factors influencing procurement decisions at different levels of the public sector distribution system throughout Ghana.

Section 5 examines variations in margins and costs throughout Ghana.

Section 6 looks at the impact of exemptions on the RDFs and drug management in each region.

Section 7 looks at financial management issues surrounding drug distribution and management.

Section 8 presents the policy implications of the evidence collected and the options the MOH could consider based on these.

Section 9 combines the analysis and provides preliminary recommendations for the pharmaceutical pricing policy. These will be presented, discussed, and finalized during the final presentation of results in June 2003.

2. Data Definitions and Methods

2.1 Sources of Data

Data has been collected from a variety of sources:

- Review of previous studies including recent work by MOH/Ghana Health Services (GHS) and DELIVER.
- Review of international prices from World Health Organization (WHO) data for 2001.
- Purchase records from the CMS, all 10 RMSs, and a small number of SDPs in eight regions.
- Selected accounts for facilities to crosscheck costing data for a subset of facilities and to compare this to the earlier cost estimates from the costing study.
- Sales price information for selected tracer drugs collected using a standard product list questionnaire from different suppliers.
- Interviews with key respondents in the public and private sector distribution system.

See appendix 1 for the qualitative and quantitative questionnaires. Qualitative questions were framed around four main areas covering—

- purchasing
- sales and margins
- exemptions
- financial management and performance.

The questions in each sub-section of the questionnaire were carefully linked to the policy objectives discussed in section 1. The aim was to ensure that each question had a policy relevance and that there was a clear framework in which to analyze the answers. This, in turn, informed the structure of the present report. The qualitative questions were also linked to the quantitative data collection from different sources.

The quantitative questionnaires covered for the tracer drugs include—

- purchase prices at each level by source for 2001[1] and 2002
- sales prices at each level by destination for 2001 and 2002.

Cost information was also collected for selected facilities for 2002. The relationship between the data collected and the core policy objectives are summarized in table 2.1.

[1] Where data were available, 2001 purchase price information was included.

Table 2.1. Data Collected and Core Policy Objectives

Qualitative Question	Quantitative Indicator	Efficiency	Equity	Sustainability
Procurement	Comparative prices	✓		
Margins	Comparative prices	✓	✓	✓
Exemptions	Exemptions data		✓	✓
Financial management	Accounts	✓		✓

2.2 Region Selection

The WHO baseline survey has different but overlapping objectives with the present pricing study. The WHO survey is intended to support monitoring and evaluation of the Ghana National Drugs Program to determine its effectiveness and guide WHO support to Ghana. We have followed the WHO approach in selecting regions but have drawn slightly different conclusions on the regions selected to better meet the needs of the pricing study.

Like the WHO study team, we considered two main criteria in selecting study regions—

- socio-economic profile and agro-ecological zone
- proximity to the CMS and presence of strong support to the regional drugs program.

Seven categories of regions were obtained; those indicated in **bold** were selected during the first round of data collection:

1. *Greater Accra* was included because of its proximity to the CMS.
2. *Central region* was excluded because it has been studied before extensively, even though it is a poor region.
3. *Volta region* was excluded because of its heterogeneity and it has also been studied in the past.
4. *Ashanti region* rather than the Eastern region, was included because we wanted to capture the teaching hospital in the pricing survey.
5. *Brong Ahafo* was included because we wanted to capture the effect of the RMS being located outside the regional capital to see how this affects prices. The Western region was excluded.
6. *Upper East region* was included because the Northern region is experiencing ethnic conflict.
7. *Upper West region* was excluded because it has had comprehensive support in the past.

To summarize, we visited Greater Accra, Ashanti, Brong Ahafo, and Upper East Region. After the field work was completed, we felt that some additional SDPs should be visited to obtain additional RMS and SDP data. Additional visits were then made to facilities in Greater Accra, Central, Northern, Eastern, and the Upper West region.

2.3 Facility Coverage

A total of 67 facilities were surveyed: 51 from the public sector and 16 from the private sector. All the RMS in each of the 10 regions in Ghana were visited. Four regions were initially selected for more detailed visits and analysis based on an examination of socio-economic factors. This was expanded to five regions and within each a small non-representative random sample of facilities were visited. Table 2.2. shows the distribution of facilities visited by type of facility and region. See appendix 2 for a full list of facilities visited.

Table 2.2. Facilities Visited during the Pricing Study

						SDP				
Region	**Total**	**CMS**	**RMS**	**GSMF**	**Teach. Hospital**	**Public**	**Private**	**Mfr.**	**Pharm.**	**Whsles.**
Ashanti	11		1		1	4	1		3	1
Brong Ahafo	10		1			6	1		2	
Central	4		1*			3				
Eastern	5		1*			4				
Greater Accra	11	1	1*	1	1	3		1	2	1
Northern	11		1*			7	1		2	
Upper East	7		1			4	1		1	
Upper West	6		1			3			2	
Volta	1		1*							
Western	1		1*							
Total	**67**	**1**	**10**	**1**	**2**	**34**	**4**	**1**	**12**	**2**

***** Indicates an additional interview conducted with Regional Health Administration.

The high coverage of RMS means the study is covering the majority of purchasing in the public supply system. The study did not have the resources or scope to conduct a statistically significant sample of SDPs. The intention was to supplement those surveyed with information from other recent studies, including DELIVER's decentralization study and the WHO baseline pharmaceutical studies.

2.4 Product Selection

A list of tracer products has been used to monitor how the price of these products change as they move through different stages of the public and private distribution system, and in different geographic points. Comparisons between public and private prices, as well as international prices, will indicate relative margins and relative competitiveness. The goal is to build a picture of margins that will provide a wider understanding of how prices evolve for all drugs.

The tracer products were selected using a mixed VEN ABC analysis of CMS purchases of EML drugs, with a number of adjustments to add non-EML items. As we only examined 20 to 25 products, we focused on A value drugs that are vital drugs. The product selection involves a series of steps initiated in Ghana but completed in Washington.

Table 2.3. Vital Drugs

		EML		Non-EML
ABC	**Vital**	**Essential**	**Non-essential**	**Non-essential**
A: Drugs accounting for a high proportion of total value (80%).	✓	✓	✓	✓
B: Drugs accounting for next 15%.	✓			
C: Drugs accounting for final 5%.	✓			

1. A VEN analysis was conducted by Joycelyn Azeez on the 71 drugs in the list of full-supply drugs at the District Hospital level. This provided one level of prioritization.

2. This list was reviewed by DELIVER's Johnnie Amenyah and shortened to a list of 25 drugs and three contraceptives.

3. An ABC analysis was then undertaken of the 2001 consumption data from the CMS. Some questions were raised about the validity of the CMS data as some products were showing zero consumption during the year.

4. The highest value CMS drugs were then compared with the 25 drugs from step 2 above and several categories of high-value drugs were excluded including—

   - Tuberculosis (TB) and psychotropic drugs that are provided only by the public sector and are free; these drugs accounted for 33 percent of reported CMS purchases in 2001.
   - Controlled substances.
   - Anesthetics.
   - Products with variable dosage levels that would be difficult to calculate exact and meaningful price comparisons.
   - Other products that were procured on a limited basis, even with high unit value, as these are not likely to be widespread in the system.

5. The remaining drugs were then ranked by their value; this was expressed as a share of total CMS drug purchases excluding TB and psychotropic drugs.

6. The top 26 drugs, in terms of their share of total CMS purchases, were then reviewed and further adjustments were made. Products remaining on the list that had a lower value share were replaced if they had a substitute with a higher share, i.e., acetylsalicylic acid (aspirin) was replaced by paracetamol.

7. The next adjustment involved putting anti-snake bite serum back on the list. It was on the original list of Full Supply Essential Drugs but CMS data erroneously showed no consumption.

8. Finally, packaging size was considered with several drugs being listed in multiple package size.

The final table of 30 drugs is listed in table 2.4. This was expanded to a list of 39 products when common multiple forms of packaging were identified. This list is provided in table 2.5.

Table 2.4. Initial List of Selected Tracer Drugs with 2001 CMS Consumption Levels

No.	Rec. No.	Unit Size	Description	2001 Annual Consumption	Unit Price Low	Total Value Million Cedi	Share of Total CMS (%)	Cumulative Share of CMS (%)
1	51	1000	Chloroquine Base 150 mg tab	18,500	32,000.00	592.0	3.1	3.1
2	181	1	ORS*	2,400,000	428.60	1,028.6	5.3	8.4
3	185	1	Paracetamol Syrup 120 mg/5 ml, 1 l	80,000	2,400.00	192.0	1.0	9.3
4	184	1000	Paracetamol 500 mg tab	50,000	14,000.00	700.0	3.6	13.0
5	254	1	Water for Injection 5 ml	1,000,000	65.33	65.3	0.3	13.3
6	80	1	Dextrose 5%, 500 ml	70,000	7,836.10	548.5	2.8	16.1
7	50	1	Chloroquine 40 mg/ml, 5 ml	700,000	598.00	418.6	2.2	18.3
8	15	1	Amoxycillin 125 mg/5 ml Suspension 100 ml	300,000	780.00	234.0	1.2	19.5
9	40	1000	Chloramphenicol 250 mg caps	6,000	63,250.00	379.5	2.0	21.4
10	126	1	Hydrocortisone Sod.Succ. 50 mg/ml, 2 ml	100,000	3,335.00	333.5	1.7	23.2
11	115	1	Gentamicin 40 mg/ml, 2 ml	200,000	920.00	184.0	0.9	24.1
12	176	100	Nifedipine 20 mg Retard tab	7,000	25,300.00	177.1	0.9	25.0
13	182	1	Oxytocin 5 Iu/Ml, 1 ml	110,000	1,092.50	120.2	0.6	25.7
14	9	1000	Aluminium Hydroxide 500 mg tab	5,500	14,720.00	81.0	0.4	26.1
15	31	1	Benzyl penicillin 600 mg (1mu), PFR	930,000	379.50	352.9	1.8	27.9
16	67	1	Cotrimoxazol 240 mg PFS 100 ml	300,000	747.50	224.3	1.2	29.0
17	68	1000	Cotrimoxazole 480 mg tab	12,000	34,390.00	412.7	2.1	31.2
18	149	1000	Mebendazole 100 mg tab	1,800	76,650.00	138.0	0.7	31.9
19	84	1	Diazepam 5 mg/ml, 2 ml	250,000	368.00	92.0	0.5	32.4
20	157	1000	Methyldopa 250 mg tab	1,500	289,500.00	434.3	2.2	34.6
21	245	1	Thiopentone Sodium 1 g PFR	30,000	8,625.00	258.8	1.3	35.9
22	206	1	Procaine penicillin (4 mu) PFR	300,000	2,231.00	669.3	3.5	39.4
23	98	1	Ergometrine Maleate 500 mcg/ml, 1 ml	600,000	938.40	563.0	2.9	42.3
24	52	1	Chloroquine Base Syrup 80 mg/ml 100 ml	43,000	6,037.50	259.6	1.3	43.6
25	168	1000	Multivitamin tab	40,000	5,520.00	220.8	1.1	44.8
26	129	1000	Ibuprofen 200 mg tab	12,000	17,210.00	206.5	1.1	45.8
27	18	1	Anti Snake Bite Serum Polyvalent 20 ml					
28		1	Male condom					
29		Cycle	Low dosage oral Contraceptive pill					
30			Injectable contraceptive					

Table 2.5. Final List of Tracer Drugs

Aluminium Hydroxide 500 mg, 500 mg, 1	Ibuprofen 200 mg, 200 mg, 1
Amoxycillin Suspension 125 mg/5 ml, 100 ml, 1	Ibuprofen 200 mg, 200 mg, 1000
Amoxycillin Suspension 125 mg/5 ml, 60 ml, 1	Injectable (Depo Provera) 1
Anti Snake Bite Serum 100 ml, 10 ml, 1	Low Dosage Pill, cycle, cycle, 1
Benzyl Penicillin 600 mg (1MU), 600 mg, 1	Mebendazole 100 mg, 100 mg, 1
Chloramphenicol 250 mg, 250 mg, 1000	Methyldopa 250 mg, 250 mg, 1
Chloroquine Base 150 mg, 150 mg, 1	Methyldopa 250 mg, 250 mg, 1000
Chloroquine Base 150 mg, 150 mg, 1000	Multivitamin BP, BP, 1
Chloroquine Base 80 mg/ml, 80 mg/ml, 100	Multivitamin BP, BP, 1000
Chloroquine Base 80 mg/ml, 80 mg/ml, 1000	Nifedipine 20 mg, 20 mg, 30
Chloroquine 40 mg/ml, 5 ml, 1	ORSSachetSachet 1
Condom (male) 111	Oxytocin 5 iu/m, 1 ml,1
Cotrimoxazole 240 mg, 100 ml, 1	Paracetamol Syrup 120 mg/5 ml, 1000, 1
Cotrimoxazole 240 mg, 60 ml, 1	Paracetamol Syrup 120 mg/5 ml, 60 ml, 1
Dextrose 5% 500 ml, 500 ml, 1	Paracetamol 500 mg, 500 mg, 1
Diazepam 5 mg/ml, 2 ml, 1	Paracetamol 500 mg, 500 mg, 1000
Diazepam 5 mg/ml, 2 ml, 100	Procaine Penicillin 4 MU, 4 MU, 1
Ergometrine Maleate 500 mcg/ml, 2 ml, 1	Thiopentone Sodium 1 g, 1 g, 1
Gentamicin 40 mg/ml, 2 ml, 1	Water for Injection 5 ml, 5 ml, 1
Hydrocortisone Sodium Succinate 50 mg/ml, 2 ml, 1	

2.5 Analytical Approach

The analytical model adopted involved the application of a combination of applied industrial and trade policy techniques with a logistics-based process mapping analysis. Detailed price comparisons were conducted, taking into account differences in product description; packaging; point of sale; time of sale; and, where possible, quality. At each stage of the distribution system, we sought to determine the value added being created, and we measured this through both cost estimates and price comparisons. The process mapping approach ensured that we identified which steps in the distribution system were redundant, and where they were, which lead to negative value added.

Initial research conducted by DELIVER had identified a number of policy issues that needed further exploration. The qualitative and quantitative questionnaires were designed to address these issues, with each question linked to a specific policy issue. Data collection was then linked to identified analysis and table outputs and these, in turn, linked to specific recommendations.

The data collection and analysis approach adopted involved relying on a joint MOH/GHS/DELIVER team to complete the work in a short period of time. Several advantages of this approach over commissioning a local data collection firm were identified:

- We could ensure data quality better during data collection and during data review and cleaning.
- We were able to make adjustments to the final list of tracer drugs based on further expert input from the MOH/GHS counterparts.
- The analysts had a better understanding of the information, and were better placed to draw relevant policy conclusions from it.

- The DELIVER and MOH/GHS team members brought complementary skills that enabled each team member to learn from each other while ensuring applied policy analysis skills were developed among the MOH/GHS team.

- It enabled the initial data analysis and policy conclusion work to be conducted in Ghana, ensuring the full participation both from the local MOH/GHS counterparts involved in data collection and the senior MOH/GHS policy makers who participated in a workshop session.

- The develpoment of local applied policy analysis expertise means the exercise will be more easily replicated in the future.

After initial testing of the questionnaires and training of the team members, the six-person survey team split into three groups, each covering different regions. A Microsoft Access database data entry tool was developed to facilitate simultaneous quantitative data entry by each of the three teams looking at purchase and sales invoice information at each of the main facilities visited. The teams split up and conducted separate programs of interviews during the first two weeks of the mission. Regular contact between the teams ensured that the experience and any data issues encountered by one team were shared with the other teams.

At the end of the second week, the three teams met in the Central Region to analyze and share findings. During a three-day workshop, the teams grouped the findings under the four main survey headings: procurement, margins, exemptions, and financial management. Initial conclusions were then shared with Samuel Boateng of the MOH and two senior CMS staff.

2.6 Limitations to the Approach

Before proceeding with the analysis and interpretation of results, a number of limitations needed to be considered. These limitations were largely due to budget and time constraints.

The study did not look at the *demand for drugs*. The patient survey could not be used to analyse perceptions and preferences or willingness and ability to pay. We have not, therefore, sought to determine how client preferences impact on procurement decisions. For example, in Ashanti region, officials quoted that the higher standard of living of people in the region meant that patients were less willing to accept generic drugs, prefering brand drugs, as these were perceived to be of higher quality. The absence of a demand component of the study also prohibited the team from determining if quantities procured at the SDP level were sufficient to meet demand. This would have also helped reveal if procurement decisions are being driven by cash on hand and the ability to secure credit facilities. Some qualitative comments suggested that decapitalization of the RDF forced SDPs to procure what they could afford rather than what their client population needed.

High levels of retail pharmacy prices. Retail prices at the pharmacy level are extremely high compared to SDPs and may reflect different clientel. This could also have been examined with a survey of pharmacy clients to determine willingness and ability to pay. As many SDPs quoted, they looked at pharmacy prices in setting their own prices; this aspect should be considered in the future.

Small number of SDPs visited. We did not have the time or resources to consider more than a small number of the SDPs. Conclusions and data from the SDPs are not statistically significant and too much emphasis should not be placed on the SDP results. Where the SDP results throw up interesting results, these should be examined in more detail by future SDP surveys.

Price comparisons were made over time rather than at specific points of time. The prices compared represent average prices over the review period, 2001–2002. Exact comparisons at specific points of time would have been preferable but ex post facto were not possible.

Sales prices at SDPs were based on price lists rather than an analysis of actual prescriptions. Time limitations prevented us from assessing the daily prescription books kept by SDPs and private facilities. Ideally, analysis of samples of individual prescriptions would have allowed us to reconcile the prices actually charged and to compare these against the sales price lists.

Volume and price analysis at each level. The ABC and VEN analysis was undertaken with CMS data, on the assumption that the relative importance of these EML drugs at this level would reflect their importance at the RMS and SDP levels. Because RMS buy a majority of drugs from the private sector, this assumption may not be valid. However, we do not feel the conclusions drawn from the study would change if other drugs were included.

3. Overview of Ghana's Health and Distribution System

3.1 Overview of Health Situation

Considerable improvements have been made in health status among Ghanaians since the country achieved independence in 1957. The infant mortality rate has decreased from 133/1000 in 1957 to 56/1000 in 1998. Life expectancy has also improved from 45 in 1957 to 57 in 2002 (PRB 2002). However, relative to other countries, especially in East and Southern Africa, health status remains poor. Mortality rates are still high and disease patterns remain challenging. Nutritional problems still persist and the use of health services remains low. Health outcomes demonstrate significant inequities between different geographical areas of the country and different socio-economic status.

Prevention is key. More than 60 percent of the diseases suffered by many Ghanaians are preventable, communicable diseases. Outbreaks of epidemics, notably, meningitis, cholera, and yellow fever, still occur despite preventative public health measures. Furthermore, emerging threats such as HIV/AIDS infections will become a significant threat to public health if left unchecked.

The underlying causes for poor health have also not been addressed adequately. While the rate of population increase been slowed to 2.2 percent annually, half the population does not have access to adequate sanitation, illiteracy remains high, and poverty affects more than one-third of the population. Challenges to improving the Ghana health system include increasing access to health services; improving poor quality; addressing system inefficiences; addressing inadequate collobration between private and public systems; and increasing funding for health commodities and services (Republic of Ghana 1999).

The primary concerns in the health sector, according to the Ministry's Development Framework, focus on a number of areas, which are incorporated into the MOH's current Five Year Program of Work. They include access, quality, efficiency, collaboration, and inadequate resources. More than half the population must travel significant distances to visit primary health care facilities. The problem is much worse in the northern regions of the country where communities are widely dispersed and transportation infrastructure remains relatively poor. In addition, most rural communities are not adequately served because facilities, both public and private, are predominantly located in urban areas. Concerns about quality of service relate to the attitude of staff, especially during emergencies. The lack of technical skills, in some areas coupled with frequent shortages of drugs and other medical supplies, also contribute significantly to the low quality of services.

Low staff morale among providers is also seen as a key cause of the low service quality in the sector. This is most likely due in part to inadequate working conditions that, according to many health workers, are below standards when compared to other public sector facilities. Another contributing factor is the limited number of skilled staff, which results in a high concentration of significant responsibilities among a few experienced staff. Supervision, monitoring, and regulation of staff and service delivery is also inadequate.

Nonavailability of essential supplies, functioning equipment, and poor physical infrastructure, the result of many years of neglect, has put a number of facilities in a serious state of disrepair, making it very difficult for staff to provide quality services.

Institutional inefficiency is characterized by the centralized, hierarchical arrangement of the Ministry. This, coupled with the inflexible civil service regulations (especially, personnel functions—recruitment, promotions), makes it difficult for the Ministry to perform optimally. Policy formulation and policy implementation and/or execution by the same agency (MOH) have led to confused roles and responsibilities. These issues are being addressed by the creation of the Ghana Health Service. Inaugurated in February 2003, it is now responsible for managing health service delivery while the MOH continues to be responsible for policy design.

Without adequate collaboration, regulation, and control, the rapidly growing private sector is a major challenge to the health sector. In many instances, this has led to duplication of efforts and an inordinate urban/rural distribution of basic services. Although the private sector sees a significant proportion of patients, their involvement in the planning and decision-making process of the Ministry is very limited. In the same context, the application of primary services and essential drugs has not been actively promoted.

Total expenditure on health in Ghana is about $12 per capita with 50 percent of this being out-of-pocket. The current health budget is about $6.50 per capita now, compared to $10 per capita in 1978. The health sector receives between 8–10 percent of total government recurrent budget and about 6 percent of capital budget. Donor support to the health sector has been increasing rapidly from $4 million in 1990 to $25 million in 1995 and about $27 million in 1998. Tertiary services still take a large proportion of health resources. About 65 percent of government recurrent budget allocation is salary related. Most resources are controlled at a higher level and resources from different sources are not linked, thus diffusing accountability. The concept of performance contracts and service level agreements have been ineffective in linking goals to performance and to increase accountability within the health system.

Within the country there is a marked difference in both health and economic indicators. The Northern Regions, including Upper West and Upper East, have a higher rate of infant and maternal mortality, low birth weight deliveries, and adult mortality, with overall lower life expectancy. In contrast, wealthier regions, such as Ashanti, Greater Accra, and others, score higher in nearly every key health indicator. Not surprisingly, there is a strong correlation between economic development and overall health status by region.

3.2 Overview of the Logistics System

Regardless of price, an efficient drug logistics system must be in place to deliver commodities to end users. The Ghana MOH currently has in place a number of vertical public sector supply chains based on the type of health commodity. While integration is currently taking place to look at a more rationale way to combine the essential drug, contraceptive, and non-drug consumable supply chains, policy changes necessary to support this have not yet evolved.

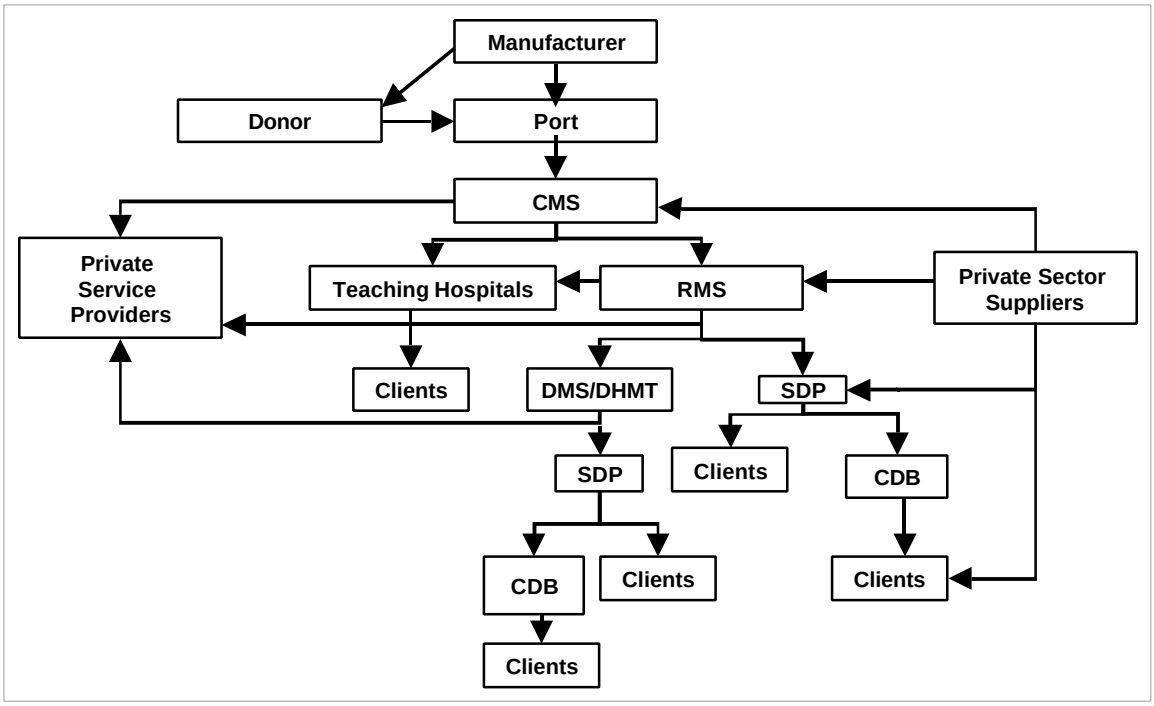
Currently, drugs are purchased by the CMS through international competitive bidding (ICB) and through local private suppliers. The RMS and teaching hospitals are meant to procure drugs through the CMS and from the local private sector. All the regional hospitals and SDPs are, in turn, expected to procure from the RMS in their respective regions. While it is MOH policy for facilties to procure through the public system, except in cases of unavailability, this study and others has observed significant private sector purchases at all levels.[2] Anecdotal evidence suggests several regional hospital managers believe they have been *upgraded* and seem to perceive themselves as outside the influence of the RMS (e.g., Tamale Regional Hospital, Ho Regional Hospital, and Cape Coast Regional Hospital). Whether they can be classified as tertiary health facilities in line with the teaching

[2] See the section on Procurement for a more detailed discussion of procurement policy and practice.

hospital is debatable. Although integration is taking place, there are still a number of district medical stores who procure from both the RMS and the local private sector. The teaching and regional hospitals and 900 SDPs are supplied by an RMS, District Medical Stores (DMS), and, in many cases, procure drugs through the local private sector.

The transportation system for essential drugs is undergoing a policy review within the MOH. Currently, lower level facilities are required to either provide their own transportation or pay for the transport of drug procurements. The CMS is now considering providing no-charge transportation to the RMS. Whether those savings will cascade to the SDPs remains unclear. The private sector, however, provides free transportation to facilties that engage in private sector procurement. This, naturally, was a key consideration in decisions by facilities to choose private over public sector suppliers (see figure 3.1).

Figure 3.1.
Structure of the Health Commodities Logistic System



Source: Huff-Rousselle, and Raja. 2002.

4. Procurement

4.1 Background

The organizational structure and procurement policies of essential drugs in Ghana are based both on the principles of decentralization and the autonomy of each facility within the drug management and distribution system (e.g., CMS, RMS, hospitals, and SDPs). Each facility is responsible for making procurement decisions in the *MOH Procurement Procedure Manual* (Republic of Ghana. 2002.). Procurement procedures are quite detailed and the procedure manual provides guidance on committee formation, bid evaluation, specification, and roles and responsibilities. The decentralized aspect of the system has both positive and negative consequences that affect rationale procurement decisions, pricing, and availability.

In general, MOH procurement rules state that a RMS must look to the CMS first to source its pharmaceutical supply needs. If the CMS is unable to meet these needs, then, with the CMS confirmation that the requested item is out of stock, the RMS can turn to the open market. To do this, the Regional Health Authority (RHA) is expected to form a procurement committee to make private sector purchases. Made up of four or five senior members of the RHA, it can follow one of two approaches. For consignments worth under $50,000, the RMS can shop locally for supplies, comparing prices and quality before deciding on the best offer. For orders larger than $50,000, a formal tender process must be followed with at least three bids being considered by the committee. For lower level facilities, a similar approach is to be followed by going to the RMS first and then only when the RMS is unable to supply can the health facility turn to the private sector.

4.2 Procurement Patterns

With decentralized management decision making, the actual pattern of procurement reflects separate decisions made by local RMS/RHA and SDP managers. The table overleaf provides the share of public and private sector pharmaceuticals sourced by the public facilities surveyed.

Five out of the nine RMS surveyed buy more from the private sector than the public sector, which creates a simple unweighted average for all RMS of 46 percent bought from the public sector and 54 percent from the private sector. This high share of drugs being bought from the private sector has a cascading effect on facilities buying from these RMSs. Even where SDPs are buying from the RMS, a corresponding percentage of these supplies have been bought from the private sector rather than from the CMS. Consequently, an SDP like Ussher Town polyclinic obtains only 30 percent of its drugs from the CMS via the Greater Accra RMS.

Table 4.1. Share of All Pharmaceuticals Sourced from the Public and Private Sector (2002)

	Region	Public (%)	Private (%)
Regional Medical Stores			
1. Ashanti RMS	Ashanti	20	80
2. Brong Ahafo RMS	Brong Ahafo	60	40
3. Upper West RMS	Upper West	63	37
4. Upper East RMS	Upper East	47	53
5. Greater Accra RMS	Greater Accra	60	40
6. Volta RMS	Volta	33	67
7. Central RMS	Central	60	40
8. Eastern RMS	Eastern	34	66
9. Western RMS	Western	40	60
10. Northern RMS	Northern		
Average		**46**	**54**
Regional Hospitals			
11. Sunyani Regional Hospital	Brong Ahafo	30	70
12. Bolgatanga Regional Hospital	Upper East	45	55
Average		**48**	**52**
Teaching Hospitals			
13. Komfo Anokye Teaching Hospital	Ashanti	6	94
14. Korle Bu Teaching Hospital	Greater Accra	30	70
Average		**18**	**82**
District Level			
15. Mampong District Hospital	Ashanti	19	81
16. Abuakwa Health Centre	Ashanti	19	81
17. War Memorial District Hospital	Upper East	35	65
Average		**30**	**70**
Sub-District Level			
18. Abessim Rural Clinic	Brong Ahafo	60	40
19. Zuarungu Health Centre	Upper East		
20. Pwalugu Health Centre	Upper East	47	53
21. Nsoatre Health Centre	Brong Ahafo	60	40
22. Ussher Town Polyclinic	Greater Accra	30	70
Average		**39**	**61**

Source: Financial accounts at each facility for all purchases of pharmaceuticals.

4.3 Factors Affecting Procurement Decisions

The qualitative survey examined the factors influencing local purchase decisions. Respondents at each level identified a number of factors, with the following mentioned most often:

- Pricing was mentioned by 64 percent of facilities surveyed.
- Following the official CMS, first policy was mentioned by 45 percent.
- Drug quality was mentioned by 41 percent.
- Drug availability was mentioned by 32 percent.

Several positive reasons were mentioned for going to the CMS and RMS for procurements:

- Five facilities mentioned that both the CMS and RMS continue to provide credit even when the private sector is failing to do so.
- Three facilities mentioned the ease of ordering from the public system.
- Two facilities stated explicitly that purchasing through the CMS was a way of controlling non-EML procurement patterns.
- Two facilities stated that the CMS was cheaper than the private sector except for a few locally produced items they would not buy because the CMS margins were too high.

Given the higher proportion of private sector purchases, a larger number of comments were made about why facilities sourced from the private sector.

- Nine facilities gave concrete examples of where they could obtain lower prices directly from local suppliers rather than passing through the CMS and RMS supply chain.
- Seven facilities stated that the poor quality of drugs supplied by the CMS were a deterrent to buying from the CMS, with five facilities quoting a specific local supplier as being problematic.
- Five facilities also quoted problems with CMS drugs that were approaching expiry.
- Seven facilities quoted the lack of availability of EML and non-EML items, the only officially sanctioned reason for not purchasing from the CMS.
- Six regions quoted that their client SDPs were prescribing non-EML drugs that were not available at the CMS, requiring to go to the private sector.
- Three facilities quoted that the private sector delivers and stacks the stocks. In one ccase, the patients do the stacking.
- Several facilities quoted that local suppliers currently provide supplies to them at the same price as they sell to the CMS. This would automatically make CMS supplies of these products more expensive. The high proportion of non-EML prescribing was quoted as the main reason in Ashanti region, which only purchases 20 percent of its supplies from the CMS.

4.4 Quantitative Analysis of Price Data

To help verify the observations made during the qualitative interviews, we analyzed the quantitative data collected on prices and procurement decisions. This data allowed us to compare—

- The number of drugs being purchased from the private and public sectors by the facilities surveyed to determine if this was what managers at different levels were reporting.
- CMS purchase prices and reported international prices to determine the effectiveness of ICB procurement.
- Differences in price for drugs sourced from the private and public sector to determine how these vary across the country and whether there is a correlation between relative prices and procurement decisions at different levels.
- Domestic and international prices to determine, for selected products, the competitiveness of local production.
- Variations in prices for selected drugs across the country at the RMS and SDP level.

4.4.1 Efficiency of Public Procurement

We can look at the efficiency of the public procurement system by comparing how it performs against the private sector internationally. We can compare CMS purchase prices against the internationally quoted prices to determine how efficient the procurement unit and CMS have been in obtaining cheap international prices. Table 4.2 compares price information from CMS purchase invoices with international information available from the MSH–RPM Plus project on international prices for generic pharmaceuticals. It shows that, in all but three of the products purchased by CMS, where an international reference price was identified, it was cheaper than the quoted international reference prices. In some cases, such as anti-snake bite and gentamicin, the difference is small. In others, amoxycillin and aluminium hydroxide, the price differences are substantial. The three products where CMS prices were higher include water for injection where the CMS is paying 126 percent more for local production and ergometrine maleate and methyldopa.

Table 4.2. Comparisons of CMS Purchase and International Reference Prices (2001–2002)

Products	Average CMS Purchase Price	Average International Reference Price	Price Differential (%)
Aluminium Hydroxide 500 mg, 500 mg, 1	0.0014	0.0047	-70
Amoxycillin Suspension 125 mg/5ml, 100 ml, 1	0.0002	0.0045	-95
Anti Snake Bite Serum 100 ml, 10 ml, 1	36.4357	38.6000	-6
Chloramphenicol 250 mg, 250 mg, 1000	6.6111	11.4000	-42
Co-trimoxazole 240 mg, 100 ml, 1	0.0017	0.0040	-58
Diazepam 5 mg/ml, 2 ml, 100	0.0258	0.0460	-44
Ergometrine Maleate 500 mcg/ml, 2 ml, 1	0.1511	0.1035	46
Gentamicin 40 mg/ml, 2 ml, 1	0.0329	0.0352	-7
Ibuprofen 200 mg, 200 mg, 1000	0.0023	0.0048	-52
Mebendazole 100 mg, 100 mg, 1	0.0019	0.0047	-59
Methyldopa 250 mg, 250 mg, 1	0.0575	0.0287	100
Multivitamin, BP, BP, 1	0.0008	0.0026	-71
ORS Sachet, Sachet, 1	0.0370	0.0628	-41
Oxytocin 5 iu/ml, 1 ml, 1	0.1030	0.2100	-51
Procaine Penicillin 4 mu, 4 mu,1	0.2373	0.3055	-22
Thiopentone Sodium 1 g, 1 g, 1	0.4571	0.7293	-37
Water for Injection 5 ml, 5 ml, 1	0.0549	0.0243	126

Source: International prices are taken from the averages quoted in the *MSH RPM Plus International Price Lists for 2001*. The CMS prices are taken from purchase invoices for 2001 and 2002, converted at prevailing exchange rates.

For the products sampled as a whole, the data analyzed suggests the CMS paid, on average, 53 percent less than the international reference price for the same products. In comparison, the 1993 Pharmaceutical Sector Assessment indicated that the MOH paid only 79 percent of the average international prices for its most recent procurement of pharmaceuticals (Rankin et al. 1993), indicating that the international tendering process was effective in obtaining low purchase costs.

As we have seen from the qualitative interviews, some of the lower cost of these ICB-procured drugs may have been achieved at the expense of poor quality. Also, it should be noted that because we are not making direct point-of-time comparisons, the results might not be accurate.

4.4.2 Analysis of Sourcing

Table 4.3 provides a summary, by region, for which RMS purchase source data was available, for the number of drugs during the period 2001 to 2002 that were—

- only purchased from the public sector (i.e., CMS)
- only purchased from the private sector
- purchased from both the public and private sectors.

Table 4.3. Percentage of the Tracer Drugs Purchased by the RMS from Either the Public or Private Sector or Both

	Public Only (%)	Private Only (%)	Both (%)	Total (%)	No. of Tracer Drugs Sampled*
Brong Ahafo	52	30	18	100	23
Central	48	17	35	100	29
Eastern	75		25	100	28
Greater Accra	76		24	100	25
Northern	40		60	100	35
Upper East	55	15	30	100	20
Upper West	80	8	12	100	25
Volta	32	54	14	100	28
Western	37	19	44	100	27
Total	**54**	**16**	**30**	**100**	**242**

Note: * Maximum number of tracer drugs is 35 excluding contraceptives.
** Difficulties with the Ashanti region RMS computer system prevented collection of more data.

Source: Purchase invoices reviewed at each facility for purchases between 2001 and 2002.

Analysis of the number of drugs purchased shows that, on average, across the regions, a small majority (54 percent) of tracer drugs are being bought exclusively from the public sector. However, this average disguises three sub-groups of RMS exhibiting similar procurement behavior.

Majority public purchasers	Eastern, Greater Accra, Upper West
Mixed public and private purchases	Brong Ahafo, Central, Upper East, Upper West, Northern
Majority private purchases	Volta

Table 4.4 indicates that at the SDP level, for the facilities visited, direct purchases from the private sector of the tracer drugs are rare. Purchases of the same drug from the public and private sector were more frequent but still only accounted for 37 percent of all the tracer drug transactions observed. The highest share of drugs being bought from both the private and public sector was 59 percent in Brong Ahafo, followed by 39 percent in Greater Accra, 38 percent in the Central region, and 35 percent in the Upper West. SDPs obtained all their tracer drugs from the public sector (RMS) in Upper East, 90 percent in Ashanti, 73 percent in the Eastern region, and 65 percent in the Western region.

Table 4.4. Percentage of Tracer Drugs Purchased by SDPs from Either the Public or Private Sector or Both

	Public (%)	Private (%)	Both (%)	Total (%)	No of Tracer Drugs Sampled*
Ashanti	90	0	10	100	29
Brong Ahafo	38	3	59	100	32
Central	54	8	38	100	24
Eastern	73	8	19	100	29
Greater Accra	50	11	39	100	31
Northern					
Upper East	100		0	100	22
Upper West	65		35	100	26
Volta**					
Western**					
Total	**59**	**4**	**37**	**100**	**193**

Note: * Maximum number of tracer drugs is 35 excluding contraceptives.
** No SDPs visited in these regions.

Source: Purchase invoices reviewed at each facility for purchases between 2001 and 2002.

This suggests that the SDPs visited in most regions are largely following the public sector first procurement policy but may be resorting to the private sector when the RMS has stockouts or when they are able to pay for supplies immediately. More careful analysis is required of the procurement decisions of the SDPs in Brong Ahafo, Greater Accra, and Central regions.

As indicated in table 4.1, while SDPs may believe they are following the public procurement system, in fact, they are dispensing a higher proportion of drugs sourced originally from the private sector. The high proportion of RMS purchases from the private sector means that SDPs are actually dispensing relatively fewer pharmaceuticals originating from the CMS than suggested in table 4.3.

Table 4.5 lists the 24 out of 35 of our tracer drugs that were bought exclusively or partly from the private sector by either or both a majority of SDPs and RMSs. The percentages shown relate to the proportion of regions buying either exclusively or partly from the private sector. For example, for benzyl penicillin, in 63 percent of the regions, the SDPs surveyed obtained part or all of their supplies from the private sector while the RMS in 38 percent of the regions bought from exclusively or partly from the private sector. For eight of these drugs, the SDPs and RMS in a majority of regions obtained exclusively or partly from the private sector. This indicates that the buy public first policy is not working either because the RMS and SDPs are ignoring it or stocksouts at the CMS and RMS, respectively, have forced them to buy from the private sector.

Table 4.5. Tracer Drugs Where Most Regions Purchased from Private Sector (% Purchased All or Partially from Private Sector)

	SDP (%)	RMS (%)
Aluminium Hydroxide 500 mg, 500 mg, 1	50	44
Aluminium Hydroxide 500 mg, 500 mg, 1000	0	50
Amoxycillin Suspension 125 mg/5 ml, 100 ml, 1	50	56
Benzyl Penicillin 600 mg(1mu), 600 mg, 1	63	38
Chloramphenicol 250 mg, 250 mg, 1000	38	70
Chloroquine Base 150 mg, 150 mg, 1000	100	50
Chloroquine Base 80 mg/ml, 80 mg/ml, 1000	75	56
Chloroquine 40 mg/ml, 5 ml, 1	25	67
Co-trimoxazole 240 mg, 100 ml, 1	38	88
Dextrose 5500 ml, 500 ml, 1	75	75
Diazepam 5 mg/ml, 2 ml, 1	25	89
Ergometrine Maleate 500 mcg/ml, 2 ml, 1	50	86
Gentamicin 40 mg/ml, 2 ml, 1	63	44
Hydrocortisone Sodium Succinate 50 mg/ml, 2 ml, 1	57	75
Mebendazole 100 mg, 100 mg, 1	13	63
Mebendazole 100 mg, 100 mg, 1000	100	50
Methyldopa 250 mg, 250 mg, 1	57	38
Multivitamin BP, BP, 1	25	56
Multivitamin BP, BP, 1000	0	60
Nifedipine 20 mg, 20 mg, 30	57	71
Oxytocin 5 iu/ml, 1 ml, 1	50	44
Paracetamol Syrup 120 mg/5 ml, 1000, 1	63	44
Paracetamol 500 mg, 500 mg, 1	50	25
Paracetamol 500 mg, 500 mg, 1000	50	67

4.4.3 Public and Private Price Comparisons

As shown in the qualitative analysis, there are a number of reasons that could encourage facilities to buy from the private rather than public sector. In section 4.3, 63 percent of the purchasing decision makers interviewed quoted lower prices as being the factor influencing their purchasing decisions. Figure 4.1 provides the average price differences across all the regions between public and private sources of supply for the 35 tracer drugs sampled. In table 4.6 we highlight the price differences for 10 drugs included in table 4.5 as being purchased by a majority of regions, either exclusively or partially from the private sector.

Table 4.6. Public and Private Price Differences for 10 Tracer Drugs Purchased by the RMS Predominantly from the Private Sector (% Difference In Price)

Drugs Where Private Suppliers Are Cheaper (%)		Drugs Where Private Suppliers Are More Expensive (%)	
Benzyl Penicillin 600 mg(1 mu), 600 mg, 1	-16	Aluminium Hydroxide 500 mg, 500 mg, 1	62
Ergometrine Maleate 500 mcg/ml, 2 ml, 1	-6	Amoxycillin Suspension 125 mg/5 ml, 100 ml, 1	122
Gentamicin 40 mg/ml, 2 ml, 1	-10	Chloroquine Base 80 mg/ml, 80 mg/ml, 1000	84
Mebendazole 100 mg, 100 mg, 1	-28	Co-trimoxazole 240 mg, 100 ml, 1	102
Mebendazole 100 mg, 100 mg, 1000	-52	Multivitamin BP, BP, 1000	70

Note: Negative means private cheaper.

This analysis shows that there were, in fact, only five drugs where the private sector is shown as being cheaper than the public sector. Procuring from the private sector for these drugs would be a rational purchasing decision. This does not necessarily mean that these are the only examples. Rather, it indicates that for the tracer drugs observed, and where a price is quoted for both a private and public suppliers, the private sector was cheaper, on average, for only five drugs. The private sector may have been cheaper in some cases but no comparative public sector price has been collected. Analysis of CMS records shows that it made eight purchases of benzyl penicillin in 2001 to 2002, and two of these were ICB purchases and the remainder were from local suppliers. The two ICB purchases were a third of the cost of the local purchases, and these suppliers sold at similar prices to RMSs and SDPs. Similarly, the price from an overseas provider for ergometrine and gentamicin was twice the level of local suppliers.

For all other tracer drugs listed, and particularly the five drugs highlighted in table 4.6, the public sector is shown to be cheaper than the private sector. Closer examination of procurement decisions shows, for example, that for amoxycillin suspension, four regions only buy from the public sector and five regions bought from both the public and private sectors. Given the price differential, purchase from the private sector would either be because of stockouts at the CMS, quality differences between the CMS and private suppliers, or the existence of non-price incentives including unofficial payments or credit and delivery. While we cannot be certain what the reasons were, the implication is clearly that purchasing private sector supplies of amoxycillin suspension would only allow the RMS to obtain half the quantity than if they had bought from the public sector. A similar picture emerges for cotrimoxazole and chloroquine base syrup in 1000 ml bottles. For aluminium hydroxide and multivitamins, two and three regions, respectively, only bought from the private sector with the others bought a mixture from the public and private sector.

Figure 4.1 is based on the average price differences across regions, and compares prices at different geographic points. It may, therefore, mask variations in prices at the regional level. This is examined in detail in the table 4.7 overleaf, which shows the difference between prices for the same product paid by an RMS to private and public suppliers. A positive difference indicates the private sector product is more expensive while a negative difference shows the private sector is cheaper. Looking at the detailed analysis indicates that the private sector was cheaper in 10 cases. The Upper East RMS and Greater Accra obtained cheaper drugs from the private sector in the majority of their procurement examples.

Figure 4.1.
Average RMS Price Differences for the 35 Tracer Drugs Across All Regions

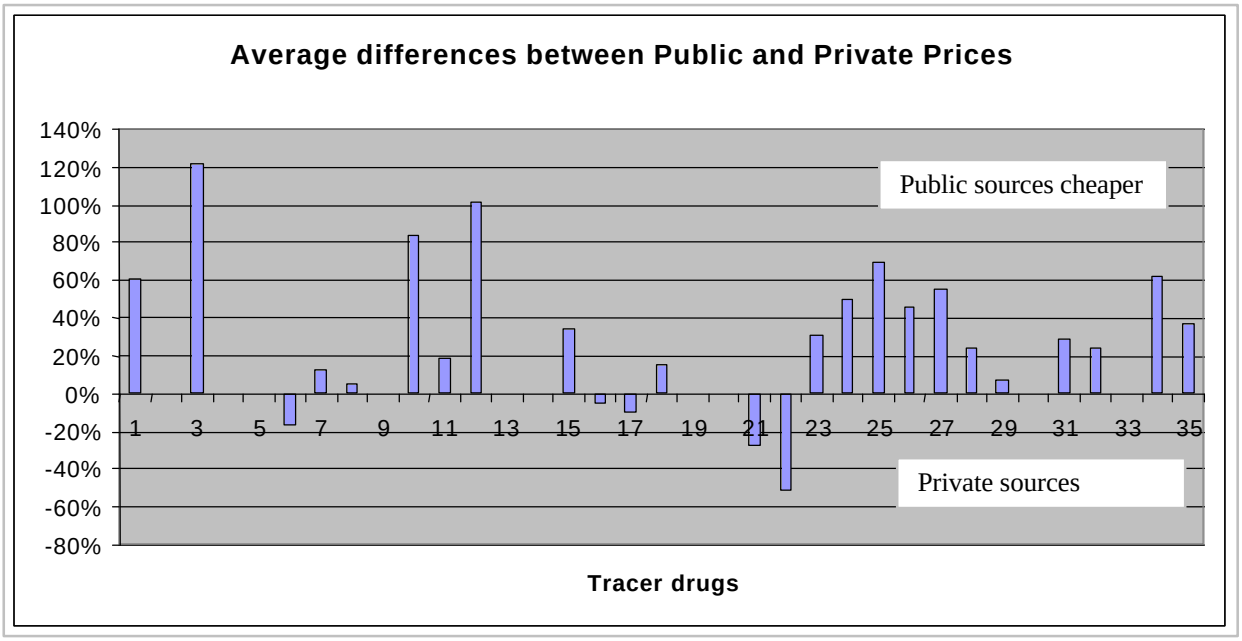


Table 4.7. Regional Differences In Prices Paid to Private and Public Suppliers (% Difference, Positive Indicates Private Sector More Expensive)

Tracer Drug Description	Brong Ahafo (%)	Central (%)	Eastern (%)	Greater Accra (%)	Upper East (%)	Upper West (%)	Volta (%)	Northern (%)	Western (%)
Aluminium Hydroxide 500 mg, 500 mg, 1				-5					333
Amoxycillin Suspension 125 mg/5 ml, 100 ml, 1		181		0				218	
Benzyl Penicillin 600 mg(1mu), 600 mg, 1					-52				-3
Chloramphenicol 250 mg, 250 mg, 1000	22		50					35	
Chloroquine Base 80 mg/ml, 80 mg/ml, 1000		140	77				63	57	
Chloroquine 40 mg/ml, 5 ml, 1		20	52					-7	
Co-trimoxazole 240 mg, 100 ml, 1	61	156				31	97		101
Diazepam 5mg/ml, 2 ml, 1	31	63				20			
Ergometrine Maleate 500 mcg/ml, 2 ml, 1		-4			-14			32	
Gentamicin 40 mg/ml, 2 ml, 1			-29						
Hydrocortisone Sodium Succinate 50 mg/ml, 2 ml, 1		26						3	
Mebendazole 100 mg, 100 mg, 1				-68	-2			55	
Methyldopa 250 mg, 250 mg, 1						10			
Multivitamin BP, BP, 1		-13						100	50
ORS Sachet, Sachet, 1								56	
Oxytocin 5 iu/ml, 1 ml, 1				89					
Paracetamol Syrup 120 mg/5 ml, 1000, 1		22							
Paracetamol 500 mg, 500 mg, 1								30	
Paracetamol 500 mg, 500 mg, 1000			37						
Thiopentone Sodium 1 g, 1 g, 1							84		
Water for Injection 5 ml, 5 ml, 1								21	
Number of drugs where private sector cheaper		**2**	**1**	**2**	**3**			**1**	**1**
Number of drugs where the public sector cheaper	**3**	**7**	**4**	**1**		**3**	**3**	**10**	**3**

For all other regions, the public sector appears to have been cheaper in the majority of cases, with substantial differences in some cases. Repeating the point made in conjunction with figure 4.1 and table 4.6, whatever the reason for the decision to buy from the private rather than the public sector, the net result is that the public sector is able to obtain fewer drugs when buying from the private rather than public sector. This represents a cost to the health system caused by a combination of public-sector stockouts, poor public quality, poor procurement decisions, and poor management supervision. An analysis of the value of procurements observed by the study enumerators for the tracer drugs sampled suggests that the aggregate cost of these factors could be adding an additional 7 percent to drug costs. While these costs are partly offset by the savings when the private sector is cheaper, it still represents a cost that can be reduced by a better managed public procurement system.

4.4.4 Consequences of Decentralized Decision Making

Decentralization of management has been a feature of Ghana's health sector since the establishment of the District Health Management teams in 1978 (Chandani et al. 2000.) and, subsequently, the implementation of the Strengthening District Health Systems project in 1988 (Bossert et al. 2000). Decentralization of health management allows decision making by regional, district, and facility managers. These typically have a better understanding of the health needs of their respective client populations than health managers in a central MOH location. Decentralized health management is better able to respond to their population health needs by planning and delivering the most needed health services and medicines.

A key aspect of Ghana's decentralization has been the establishment of budget management centres that can autonomously set and manage budgets. While guidelines exist for both procurement and setting price margins (see section 5), decisions on both have been decentralized to the RMS and SDP managers procuring and selling their drugs. With variable monitoring and supervision at the central and regional level of the more decentralized distribution levels, the result is that the prices actually paid by patients at SDPs in different parts of the country varies considerably. These variations do not appear to be related to transportation costs but to a wide variety of factors discussed in more detail in section 5.

Figure 4.2 provides prices for 16 of the tracer drugs analyzed at different levels of the distribution system across 10 regions. These graphs are based on information brought together from data collected from the CMS, the 10 RMSs, and the SDPs surveyed in each region. They represent average prices for 2001–2002 where data was available. Unfortunately, the data is not complete, allowing comparison of a CMS, RMS, and SDP supply price for every drug in every region. Zero values for any of the three levels of prices for a region indicate that information was not available. The graphs are presented to show the cumulative price at each level so that, in most cases, CMS prices are lower than RMS prices and RMS prices are lower than SDP prices. In some cases, prices at the SDP are shown as lower than the RMS price, which could be due to differences in the time when purchases and sales were made or due to prices being set low to clear products before they expired. All the graphs show considerable variation at each level across regions, although the CMS sales prices are more consistent across regions.

Figure 4.2.
Comparison of CMS RMS and SDP Sales Prices for Selected Drugs

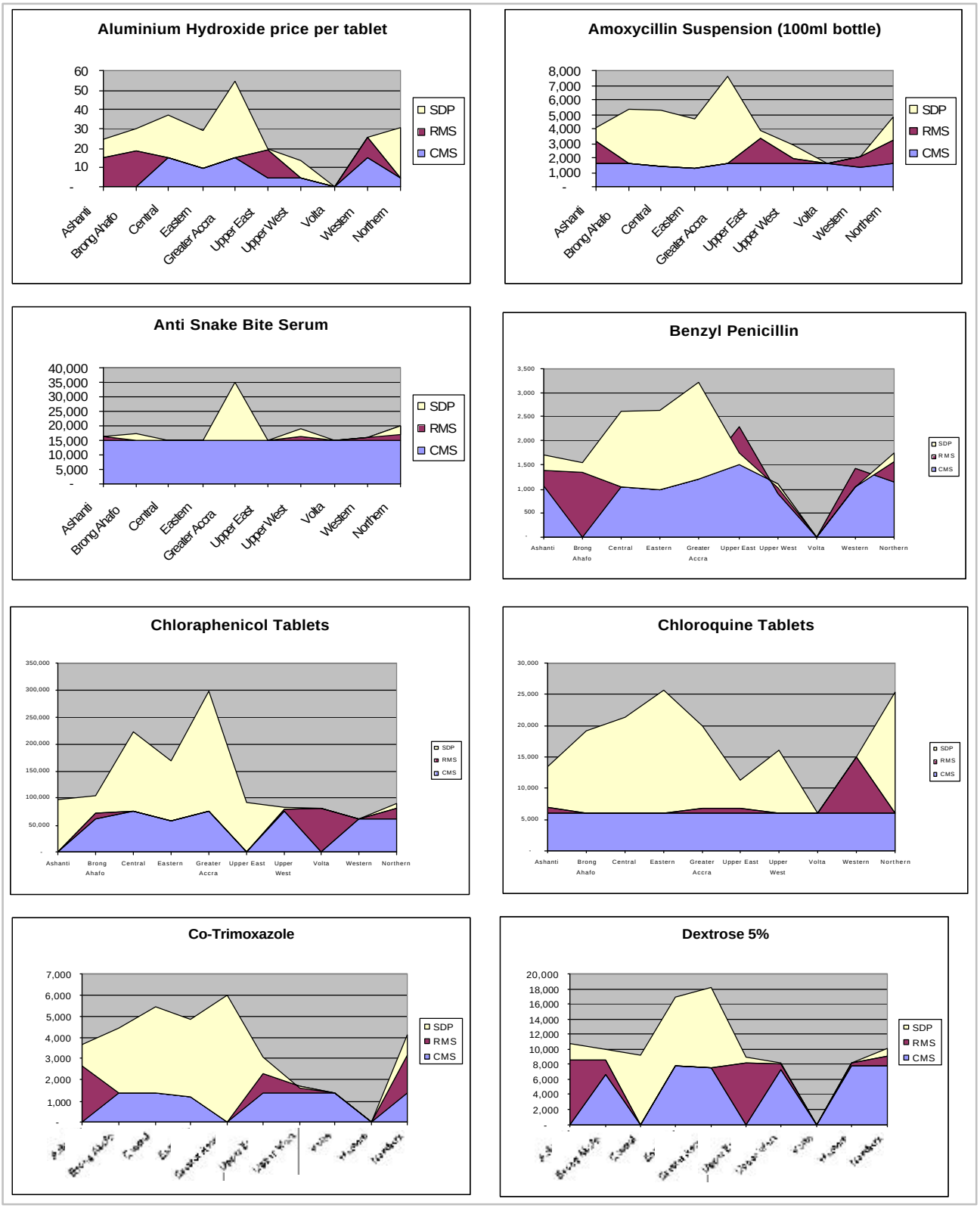
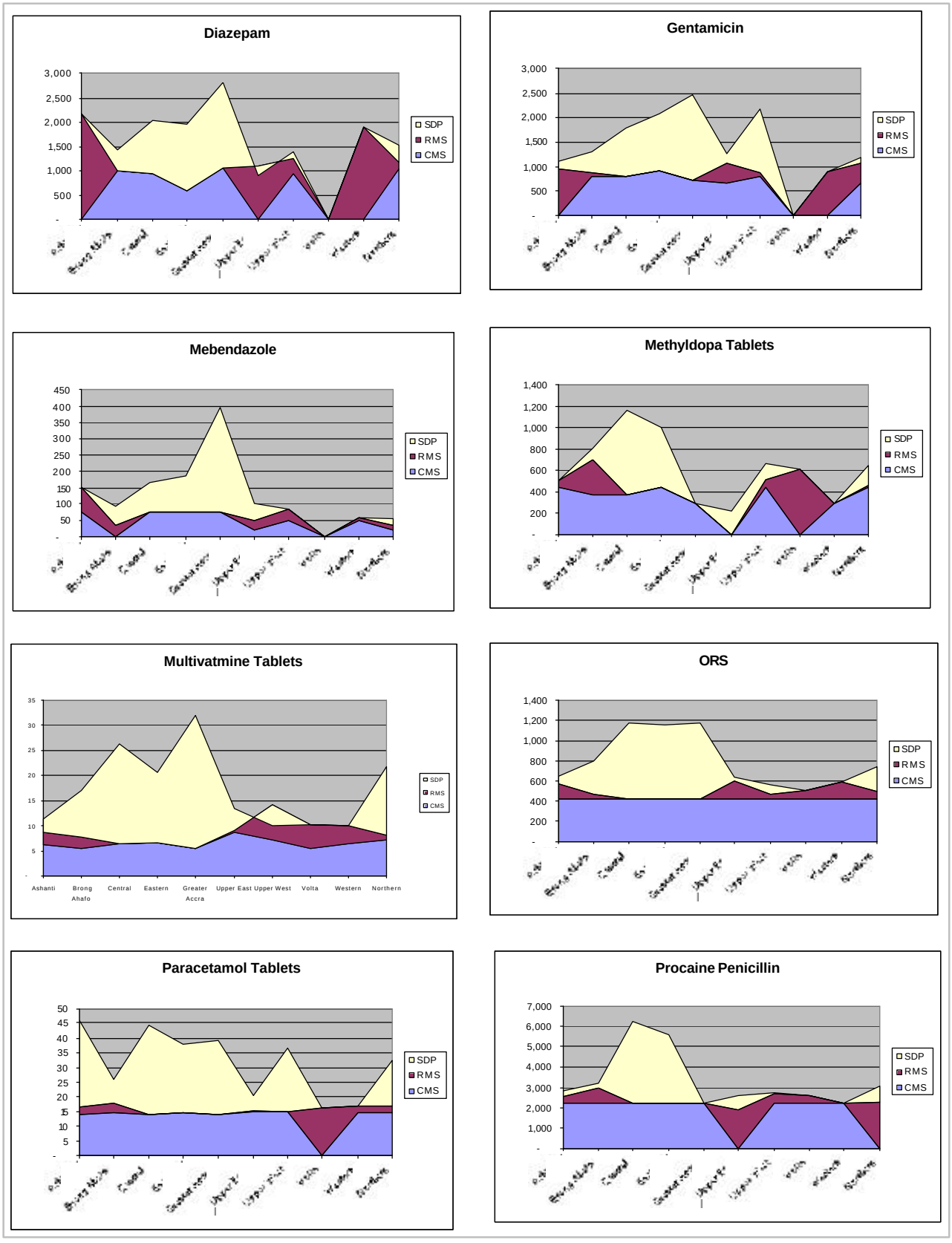


Figure 4.2.
Comparison of CMS RMS and SDP Sales Prices for Selected Drugs (continued)



4.4.5 Comparing the Public and Private Distribution System

Another price comparison that would help inform policy would be to compare prices offered by the CMS against those offered by private sector wholesalers. Unfortunately, the study was only able to survey two wholesalers. Table 4.8 presents a comparison of the sales prices quoted by the CMS and these two wholesalers. The table suggests that compared to the wholesaler interviewed in Ashanti region, who quoted prices from their Accra head office, they offered prices that were cheaper than the CMS for seven out of 14 products for which comparative information was available. The wholesaler visited in Accra is a smaller enterprise and was only able to offer prices lower than the CMS in one out of 13 products, where data was available. While not sufficiently robust to allow firm conclusions, these two examples suggest that, for some products, private sector wholesalers can compete with the CMS.

Another level of comparison between the public and private distribution sector would be to compare prices and margins at pharmacies with those at SDPs. In many public sector SDPs visited, managers said they set their prices slightly below those they observed in local pharmacies because they felt this was what patients would be willing to pay. This commerical pricing behavior is undertaken on the assumption that those unable to pay would be entitled to exemptions. This observation has two important implications. First, if the high prices being charged at SDPs are reflective of local market conditions, and the resulting margins are far greater than the cumulative 45 percent technically allowed by the public sector, then it suggests that private sector margins are themselves far higher. Second, part of the problem with exemption claims and reimbursement may be related to drugs being priced at too high a level at the SDP. Discussions with private pharmacies were mixed in terms of the mark-up quoted. While margins of 40 percent were quoted, pharmacies are aware of what their competitors charge and set prices accordingly.

Table 4.8. Comparison of CMS and Private Wholesale Prices

Average of price	CMS	Wholesaler		Wholesale Sale (%) Difference	
	Greater Accra Region	Ashanti Region	Greater Accra Region	Ashanti Region (%)	Greater Accra Region* (%)
Nifedipine 20 mg, 20 mg, 30	19,320.0	8,000.0	22,500.0	-58	16
Thiopentone Sodium 1 g, 1 g, 1	8,625.0	14,000.0		62	
Paracetamol Syrup 120 mg/5 ml, 1000, 1	8,200.0	2,950.0		-64	
Dextrose 5% 500 ml, 500 ml, 1	6,982.0	4,790.0		-31	
Procaine Penicillin 4 mu, 4 mu, 1	2,242.5	2,409.0	2,000.0	7	-11
Amoxycillin Suspension 125 mg/5 ml, 100 ml, 1	1,584.0		6,000.0		279
Ergometrine Maleate 500 mcg/ml, 2 ml, 1	1,287.0	1,200.0		-7	
Co-trimoxazole 240 mg, 60 ml, 1	1,368.0	4,790.0		250	
Benzyl Penicillin 600 mg(1 MU), 600 mg, 1	1,065.2		6,000.0		463
Diazepam 5 mg/ml, 2 ml, 1	1,023.5	840.0		-18	
Oxytocin 5 IU/ml, 1 ml, 1	940.0	1,290.0		37	
Gentamicin 40 mg/ml, 2 ml, 1	920.0	750.0		-18	
Chloroquine 40 mg/ml, 5 ml, 1	541.0	466.0	1,000.0	-14	85
Methyldopa 250 mg, 250 mg, 1	450.0	450.0	550.0		22
ORS Sachet, Sachet, 1	428.6		1,000.0		133
Mebendazole 100 mg, 100 mg, 1	76.7	167.0	100.0	118	30
Water for Injection 5 ml, 5 ml, 1	65.3		500.0		665
Chloroquine Base 150 mg, 150 mg, 1	40.7		100.0		146
Ibuprofen 200 mg, 20 0mg, 1	21.4		60.0		181
Paracetamol 500 mg, 500 mg, 1	14.3	30.0	20.0	111	40
Multivitamin BP, BP, 1	6.1	9.0	20.0	48	231
Number of products where CMS cheaper				7	12
Number of products where CMS more expensive				7	1

Note: This is a smaller wholesaler.

5. Margins

5.1 Background

The MOH has set an official policy for determining the mark-up level or margin that each level of the Ghana Health Service facilities should assess on drug sales. At the regional and service delivery levels, the amount added to sales is intended to maintain the viability of the facility's revolving drug fund, allowing it sufficient funds to maintain procurement capacity while providing a hedge against inflation and losses. At the CMS, margins are also intended to cover other costs associated with drug management and distribution, including warehousing, packaging and duties, and taxes associated with international competitive bid imported drugs.

Current Ghana MOH mark-up policy is summarized below:

Central Medical Stores:	20%	For ICB plus 25% duty and VAT adding 45% to ICB prices
	15%	Sourced through local procurements
Regional Medical Stores	10%	
Service Delivery Points[3]	10%	

A central focus of the pricing study was to determine—

- Are these margins sufficient to cover the intended costs?
- What *should* the margins cover to allow each facility carry out its functions?

The last issue is particularly relevant to service delivery level facilities where decapitalization of the RDF is, in some instances, having a direct and negative impact on drug affordability and availability for clients.

The qualitative survey administered to the facilities by the pricing study team included a number of questions regarding the awareness of the Ministry's mark-up policy and its implementation. As such, these questions served as qualitative indicators intended to uncover both perceptions and practice. The preliminary findings are listed in section 5.2.

[3] Point of client service including clinics, regional, and district hospitals.

5.2 Qualitative Evidence on Margins

5.2.1 MOH Mark-up Policy

Of the 48 public facilities surveyed, only one, the Abessim Rural Clinic in the Brong Ahafo region, was unaware of any official MOH policy regarding the mark-up sale percentage for drugs. Nearly half the facilities, including Abuakwa Health Centre in Ashanti and Nsoatre Health Centre in Brong Ahafo, were aware of the policy and responded that they apply an *across-the-board* mark-up on all drugs, regardless of value. Of these facilities, there was some confusion as to whether the mark-up was 10 or 15 percent. Staff at these facilities, including Diare Health Centre and Tamle Regional Hospital, thought they should be applying a 15 percent margin rate. Perhaps most significant, the remaining facilities indicated that they were aware of the Ministry's policy, but they did not follow it when pricing drugs for sale either to lower level facilities (in the case of the RMS level) or to clients. Instead, these institutions indicated that their mark-up policy is variable and dependent on the actual cost of the drug. These facilities would, for example, sell lower-priced drugs, such as multivitamins and ibuprofen at a higher mark-up rate (up to 200 percent in many instances). Higher-priced drugs would often be sold for below the official 10 percent rate, some even at cost.

5.2.2 Margin Coverage

As stated earlier, the margin percentage is intended to cover continued procurements through the RDF for all facilities below the central level—taking into account inflation and losses. One weakness of the pricing policy was the failure to adjust margins depending on the rate of inflation. When Ghana experienced high inflation rates, higher margins were needed to prevent the RDF from becoming decapitalized. As inflation was reduced, a smaller adjustment should have been included in the margin. Separate MOH budgets are, in theory, intended to cover non-drug purchase costs, such as facility maintenance, packaging, transportation, fuel, and casual labor. Fifteen of the 41 facilities, representing 36 or one in three facilities surveyed, indicated the use of margin revenues to cover drug purchases only.

The majority of facilities, including the RMS in Ashanti, Brong Ahafo, Greater Accra, and Volta regions, indicated that margin revenue is also used for other costs associated with drug supply management, e.g., packaging, allowances, and transport. The implications of this initial finding may have a direct effect on both the viability of the RDFs at these facilities and focus on the adequacy of MOH funding to facilities for associated costs of drug management.

5.2.3 Prescriber Bias

While not directly related to drug price mark-up levels, prescriber attitudes and practices regarding a client's ability to pay has an impact on both overall drug costs and MOH policies regarding rationale prescribing.

Facility staff interviewed at six facilities indicated that service delivery personnel do judge a client's ability to pay—either through direct questions or observations—before making decisions concerning quantity and types of drug prescriptions. It should be noted that, in a number of facilities, these clients did not fall into any exempt categories, yet payment for a maximum quantity of drugs would prove a hardship.

In five other facilities where the pricing team was able to collect information on prescriber bias, it was indicated that no bias existed regarding ability to pay. Two of these facilities, the District Hospital and Pwalugu Health Centre in the Upper East region each had client exemption rates over 60 percent. The potential implication is that prescriber bias is not an issue when clients are, in any case, exempt from payment.

5.2.4 Private Sector Markups

To compare public and private sector drug prices, we surveyed 12 private facilities as part of the pricing study, including pharmacies, private clinics, and drug wholesalers. Preliminary findings on mark-up percentages indicate a wide margin variance between 10–100 percent and the variance depended on facility and drug. For example, one pharmacy in the Upper West Region had a 25 percent across the board mark-up, while another in Upper East indicated a 40 percent rate. Initial indication, based on the quantitative analysis, appears to contradict these *across the board* pricing strategies. Most likely, as was the case with a number of private facilities, margins will vary by drug. Further quantitative analysis will be conducted to make retail and wholesale price comparisons between private and public suppliers.

5.3 Quantitative Evidence on Margins

5.3.1 CMS Margins

The official MOH mark-up policy requires that the CMS implement a 20 percent mark-up on ICB drugs and a 15 percent rate on drugs purchased through local wholesalers. Table 5.1 displays the weighted average purchase price for a number of the 35 tracer drugs used in the study. Where data was available, the sales price to the RMS level is also indicated, and the difference between the two are the actual mark-ups. The results show considerable variation by product from the 25 levels. For example, the average price at which CMS purchased ORS sachets for the 2001–2002 period was 270 cedis. While its average sale price to RMS during that same period was 429 cedis. This represents a 59 percent mark-up between purchase and sales price. Gentamicin represents a 159 percent differerence, with mebendazole illustrating the highest level found, at 411. However, in a number of instances, the study found that several of the tracer drugs were sold below cost, representing a negative mark-up rate. Amoxycillin and multivitamins are examples where negative margins were found.

Using a simple average, the average mark-up rate for CMS sales to the RMS level was 60 percent based on the analysis of data collected for the 2001–2002 period. A number of explanations may account for both the overall average margin and the specific levels for each drug. One may include significant purchase price differences over time and the difficulty of comparing purchase and sales prices of specifc stock during this period. Yet, based on the average purchase and sale price during this period, it is clear that margins vary signficantly between drugs. The average margin rate for the tracer drugs used in the sample appears to be higher than stated in the MOH policy. Analysis of the CMS accounts for 2001 shows that a gross margin of 27 percent was made on drugs sold. The accounts show that money owed by the RMS equaled 15 billion cedi or 200 percent of net revenue and cash on hand. This figure has doubled each year in nominal terms since 1998 when it was 1.8 billion cedi. While the real increase is less, it still represents an important financial problem that is undermining the ability of the public distribution system to operate properly.

Table 5.1. Estimation of CMS Margins Based on the Comparison of Sales and Purchase Prices

	CMS Purchase Price	CMS Sales Price	Difference = Margin (%)
Aluminium Hydroxide 500 mg, 500 mg, 1	10.5		
Amoxycillin Suspension 125 mg/5ml, 100 ml, 1	1,748.0	1,584	-9
Anti Snake Bite Serum 100 ml, 10 ml, 1	325,666.9		
Benzyl Penicillin 600 mg(1MU), 600 mg, 1	1,018.9	1,065	5
Chloramphenicol 250 mg, 250 mg, 1000	56,707.9		
Chloroquine Base 150 mg, 150 mg, 1	29.1	41	40
Chloroquine Base, 150 mg, 150 mg, 1000	29,144.9		
Chloroquine Base 80 mg/ml, 80 mg/ml, 100	5,657.6	6,038	7
Chloroquine Base 80 mg/ml, 80 mg/ml, 1000			
Chloroquine 40 mg/ml, 5 ml, 1		541	
Co-trimoxazole 240 mg, 100 ml, 1	1,444.0		
Co-trimoxazole 240 mg, 60 ml, 1		1,368	
Dextrose 5% 500 ml, 500 ml, 1	5,700.0	6,982	22
Diazepam 5 mg/ml, 2 ml, 1	832.8	1,024	23
Diazepam 5 mg/ml, 2 ml, 100	212.8		
Ergometrine Maleate 500 mcg/ml, 2 ML, 1	1,287.1		
Gentamicin 40 mg/ml, 2 ml, 1	355.4	920	159
Hydrocortisone Sodium Succinate 50 mg/ml, 2 ml, 1	2,355.6		
Ibuprofen 200 mg, 200 mg, 1000	18,240.0		
Mebendazole 100 mg, 100 mg, 1	15.0	77	411
Mebendazole 100 mg, 100 mg, 1000	17,708.0		
Methyldopa 250 mg, 250 mg, 1	450.0	450	
Multivitamin BP, BP, 1	6.1	6	-1
Nifedipine 20 mg, 20 mg, 30	16,579.1	19,320	17
ORS Sachet, Sache, t1	270.3	429	59
Oxytocin 5 IU/ml, 1 ml, 1	752.0	940	25
Paracetamol Syrup 120 mg/5 ml, 1000, 1	7,775.7	8,200	5
Paracetamol 500 mg, 500 mg, 1		14	
Paracetamol 500 mg, 500 mg, 1000	12,833.7		
Procaine Penicillin 4 MU, MU, 1	1,943.3	2,243	15
Thiopentone Sodium 1 g, 1 g, 1	3,744.0	8,625	130

As mentioned earlier in this paper, part of the variation recorded in table 5.1 is due to inflation as the prices being compared are for different points in time.

5.3.2 RMS Margins by Tracer Drug

Starting from the original 35 drugs the study sampled, 10 tracer drugs were selected to compare specific mark-up percentages of these drugs between regions. The current mark-up policy for the RMS level for essential drugs is 10 percent. In addition, as noted earlier in this section, many of the qualitative surverys indicated that facility personnel believed their average mark-up policy to be in line with the RMS mark-up policy, thereby providing drugs to the SDP levels at fairly uniform prices across regions. Ultimately, this would result in similar prices for drugs to the client regardless of geographic area within the country. What was found from the analysis (see figure 5.1) is that not only do RMS margins for specific drugs vary signficantly by region but, in many instances, the rate is signficantly greater than 10 percent.

Figure 5.1.
RMS Margins by Tracer Drugs (0% Means No Information)

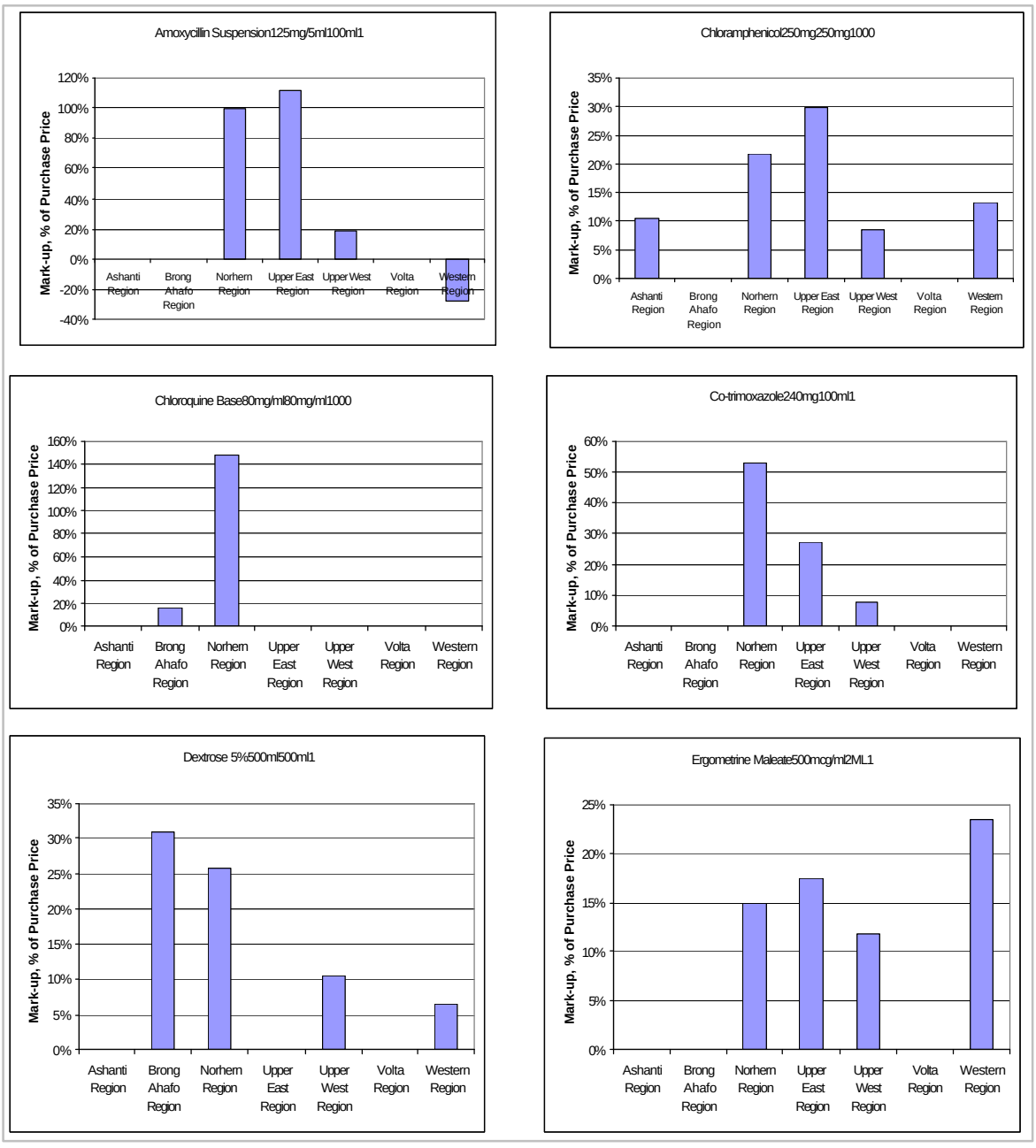
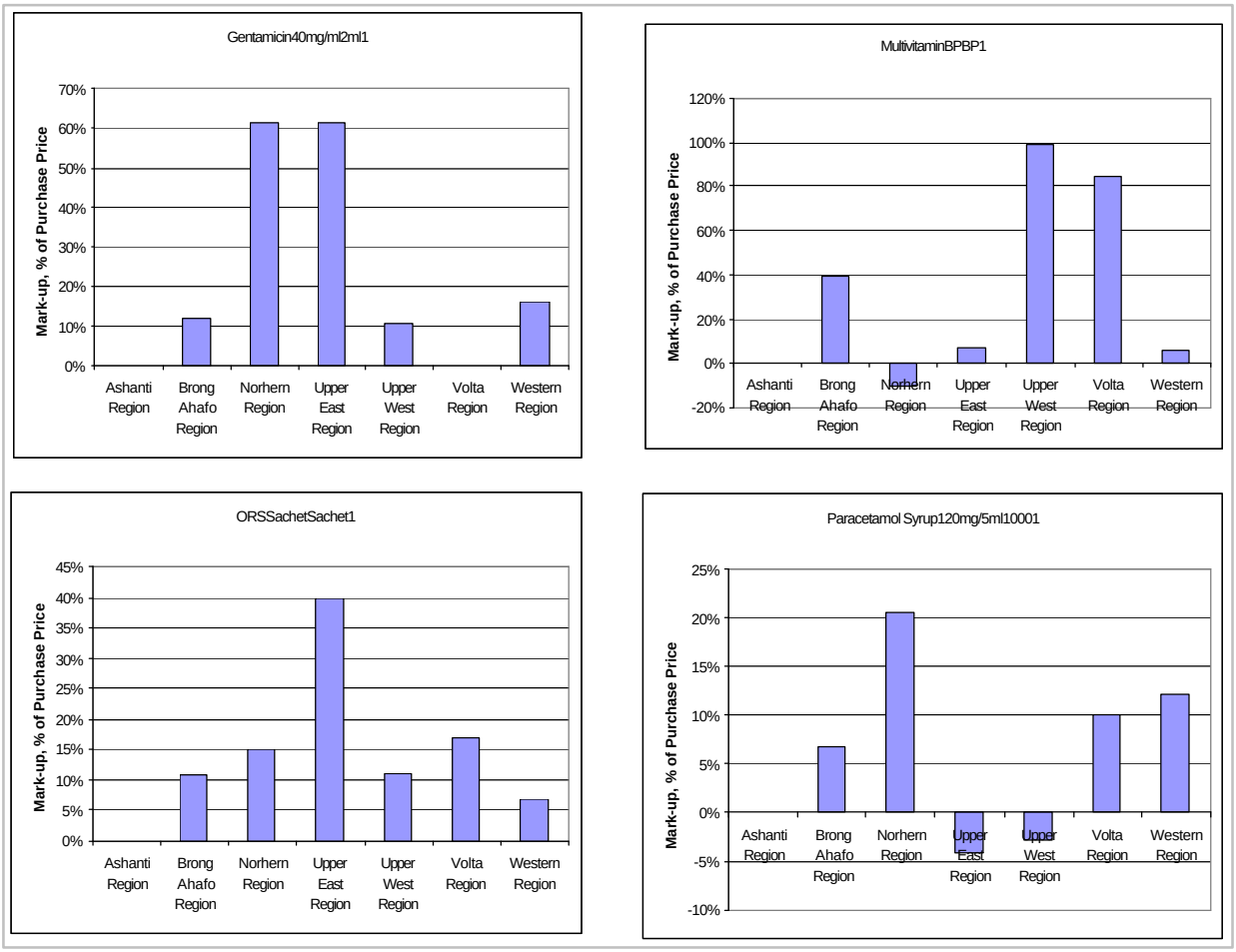


Figure 5.1.
RMS Margins by Tracer Drugs (0% Means No Information) (continued)



Amoxycillin suspension, for example, has a variance of a 111 percent mark-up rate at the Upper East region RMS, compared to a -28 percent in the Western region. Cotrimoxazole, for example, provides an illustrative example of margin variability in a cluster of the three Northern regions, where prices would be expected to be uniform. The RMS in the Northern region was selling the drug at more than a 50 percent mark-up rate, Upper-East at nearly 30 percent, and Upper West at below the official 10 percent rate. It should be noted that the Upper West region has adopted a weighted average price formula for determining its margins. This has several implications:

- The prices set differ from the official margins due to differences in source of procurement and purchase prices.

- Margins would theoretically remain the same if procurements are made from the same source and the supplier maintains the same price; this is less likely in purchasing from the private sector rather than the CMS.

- There is implicit cross-subsidization so there are no *losses*, as such.

Analysis of the data indicates that the purchase price for multivitamins was 5.52 in February 2002 and 8.7 in December, while the sales prices were 18.81 in October and 9.54 in December. These price swings are observed and may reflect changes in the sales price on some items in the market. As shown by the other bar charts, margin rates for many of the tracer drugs are not uniform. Moreover, it

is clear that when making pricing decisions, a number of factors appear to have an impact on margin levels.

The implications of the variability in mark-up percentages for similar drugs across regions include—

- higher overall prices for the consumer
- potential for a more rapid decapitalilzation of the RDF at the SDP level
- impact on procurement decisions at the SDP level (affordability of higher priced drugs).

Conversely, figure 5.1 also shows that several of the tracer drugs are being sold at below a 10 percent mark-up rate. These drugs include multivitamins in Upper East and Western region, paracetamol in Upper East and Upper West, and a negative mark-up of 28 percent in the Western region. Similar to the impact on the SDP level, it is difficult to determine how these low margin levels can be sustained, unless, as illustrated by figure 5.1, there is a type of informal cross-subsidization, as appears to be the case in table 5.2.

Table 5.2. (15) Average RMS Percentage Mark-Up for All Drugs (Where Data Available)

Area	Mark-up (%)	Area	Mark-up (%)
Ashanti	*	Upper West	29
Brong Ahafo	37	Volta	14
Central	*	Northern	35
Greater Accra	*	Western	20
Upper East	52	Average	31

* = not available

Note: Sales price data for regions with an asterisk were either limited or the data collection team was unable to obtain it. The average percentage mark-up is based on a simple average and does not take into account unit value by drug.

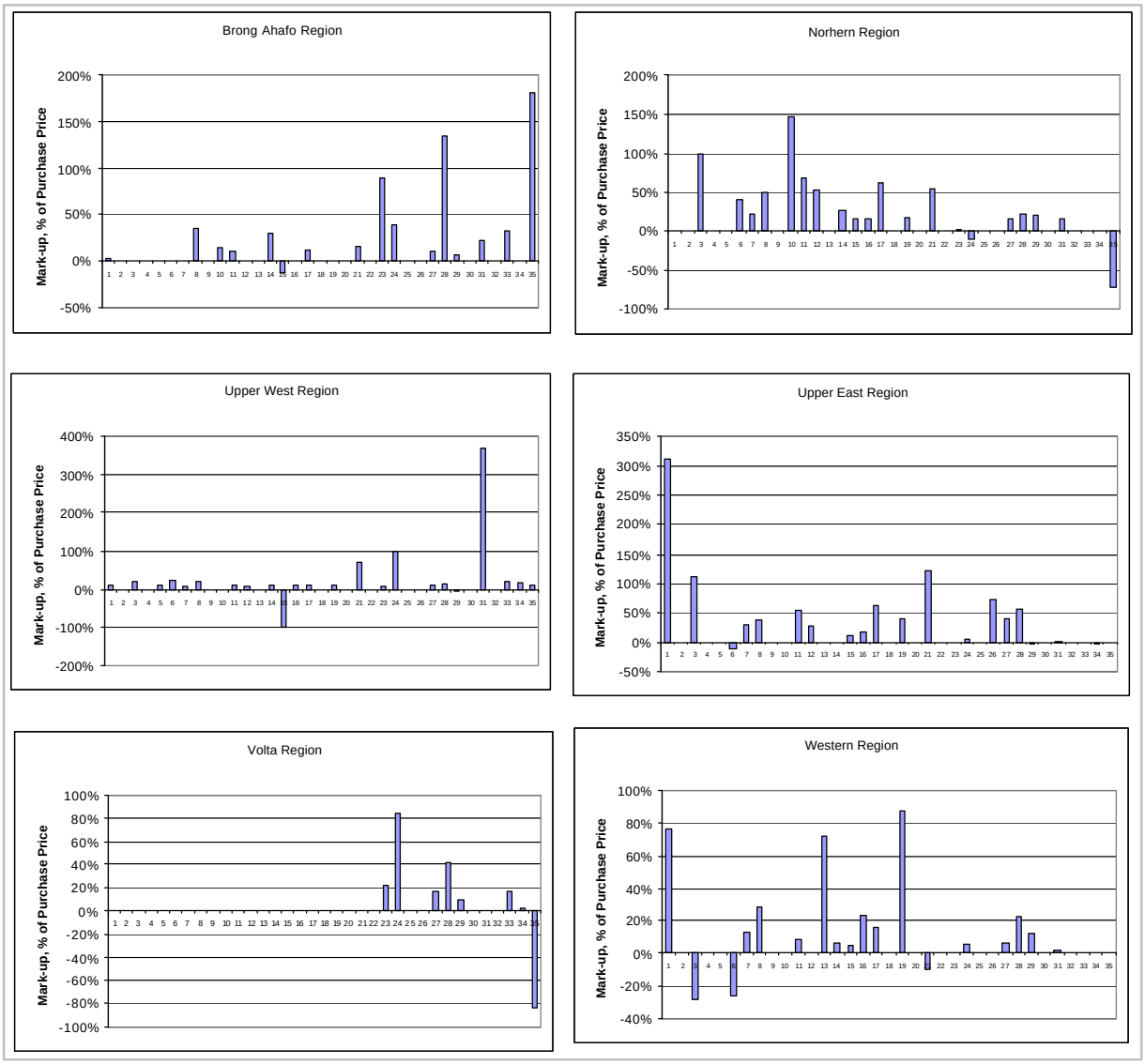
As table 5.2 indicates, despite the margin rate of below 10 percent on a number of tracer drugs in serveral regions, overall margins for the 35 sample essential drugs remains high at the RMS facilities surveyed. Average mark-up rates, based on samples taken across time for the calendar year 2002, vary between 52 percent in the Upper East region to 14 percent in Volta region. Further, the total average for the RMS level remains at 31 percent, nearly three times the target rate of 10 percent. One explanation for this seemingly high rate may be that several other products on the essential drugs list, which the study team did not sample, may have a lower mark-up rate, thus lowering the overall total rate. However, as indicated in the methodology section, the sample drugs were chosen based on a number of criteria including price and demand, and are a representative sample of products across the essential drugs list.

Based on the quantitiative findings of the study, what accounts for the suprisingly overall high mark-up rates at the RMS level? The previous discussion certainly indicates that while many of the sample drugs are being sold at levels above the 10 percent expected rate, several others fall below that rate, or are sold below cost. Either by design, by those making pricing and mark-up decisions at the RMS level, or by chance, cross-subsidization is occuring at the RMS level. What is clear, however, is that there does not seem to be a pattern for margin rates across the 35 tracer drugs sampled.

As figure 5.2 illustrates, the margin levels (the difference in purchase and sale price expressed as a percentage) for the 35 tracer drugs varies considerably within each region. For the 2002 period, the Brong Ahafo region was selling water for injection at an average of 182 percent above purchase price, while it sold chloroquine 40 mg at near the 10 percent expected rate. In the Western region, RMS

margin rates were above 60 percent for three drugs (aluminium hydroxide, cotrimoxazole, and ibuprofen). All three drugs have a signficantly different unit value, which may possibly argue against purposeful cross-subsidation. In the Northern region, mark-up rates vary between 148 percent to –71 percent. The implications of this and the previous findings will be discussed in more detail in following sections. However, the variance in margins by region and between regions is certain to have an impact on equity and afforability at the SDP and client levels.

Figure 5.2.
RMS Margins 35 Tracer Drugs by Region (0% indicates no data)



5.3.3 Service Delivery Point Margins by Region

More than 30 SDPs in eight regions were surveyed during the initial and secondary data collection period. Both purchase price from public and private sources were readily available, as well as off-the-shelf sales prices and price lists. Similar to the situation found at the RMS level, total average margins for the 35 tracer drugs varied signficantly within and across regions.

In a sample taken from available data for the 2002 calendar year, the aggregate total average margins for the SDP level was 89 percent in the Greater Accra region, representing the high. The low was in Ashanti region 17 percent.While there were a number of instances in all regions where specific drugs were either sold to clients at near the expected 10 percent rate or below. The total average mark-up rate for the SDPs surveyed in all eight regions was 33.5 percent—three times the official guidelines set forth by the Ministry. For a full listing of SDP purchase and sales data by region and mark-up levels by tracer drug, see appendix 3.

5.3.4 Cumulative Margins: Central Medical Stores Purchase Price to Service Delivery Point Sales

As indicated at the beginning of this section, the average cumulative margin in the public sector distribution system should range between 35 (for medicines sourced through local procurement) and 40 percent (those from ICB). In other words, if each level in the system (CMS, RMS, and SDP) increases its sale price over the purchase price by the policy prescribed margins, the client at the clinic or hospital should, in theory, pay between 35–40 percent more than the CMS purchase price.

Based on the quantititative findings (see figure 5.3), the pattern of cumulative margins between the central and SDP sales level for the majority of 35 sample drugs are signficantly higher than 40 percent. Further, as indicated by figure 5.3, cumulative margin levels vary considerably by drug and region. For example, the cumulative margin for aluminium hydroxide (# 7 in figure 5.3) is 137 percent in the Northern region while only 24 percent in Upper West, yet it is 267 percent in Greater Accra. In Greater Accra, chloroquine 40 mg/ml 5 ml is sold at the SDP level for an average price of 1000 cedis per unit. In Upper West, the cost is 473 cedis. The cumulative margin for gentamicin 40 mg is more than 200 percent in five of the eight regions surveyed. In total, the average cumulative margin for the sample drugs (where data was available) in eight regions exceeded 100 percent.

What accounts for the aggregated cumulative margin rate? Why are there signficant differences in margins between drugs across regions? Certainly, based on the qualitative findings, it was apparent that a majority of facilties were aware of the official MOH mark-up policy. Yet each facility also had different perceptions and practices regarding the setting of mark-up rates and variable facility policies regarding use of RDF funds for non-drug procurement expenditures. This may account for the variablity of margin rates across regions, and could be one of several explanations for the overall cumulative rate.

5.4 Facility Costs

A crucial policy question raised by the MOH is “What should margins actually cover?” What costs incurred by the distribution system should be recovered directly by margins or indirecly by budget support?

5.4.1 Qualitative Evidence

The data collected through the qualitative surveys indicate that many facility level sites, including clinics, and district and regional hospitals, are currently experiencing undercapitialization and decapitalization of their revolving drug funds. In the majority of 41 public facilties visited, staff reported inadequate RDF capitalization necessary to both procure drugs to satisfy demand and decrease debt owed to higher level facilities. If costs associated with drug management, e.g., equipment, staff benefits, and salaries are paid for by the Ministry through separate line items, why are so many facilties reporting decapitalization? According to MOH staff interviewed during the study, the RDF for facilities at the RMS level and lower levels are to be used exclusively for drug procurement, taking into account inflation, over which facilities have no control.

Figure 5.3.
Cumulative Public Sector Margins on 35 Tracer Drugs in Each Region

What are the non-procurement drug management costs being incurred by each facility? Are these costs, that, in theory, were intended for drug procurement only, decapitalizing facility RDFs at the expense of procurements? The preliminary conclusions based on the qualitative surveys and a more in-depth analysis of facility costs indicate that the facilties surveyed are incurring a number of costs associated with the management of drugs, and these expenses are coming directly from the RDFs.

Table 5.3 indicates that nearly all the facilities surveyed (where data was available) take into account inflation when projecting procurement costs. This is one area where the cost is *built-in* to the price of procurement. The facilities, therefore, do not have direct control to elect or not elect to include inflation as a drug management expense. Of note, however, is that more than 25 percent of facilties reported fuel to transport drugs (either from CMS to RMS or RMS to facilities) as a signficant expense that comes from their RDF account. Table 5.3 also shows that eight of the 41 facilities (excluding CMS) report using their RDF to procure equipment, such as computers and air-conditioners, when there is, in theory, separate MOH line items intended for such items. One hospital reported that all staff and families receive free essential drugs as part of the facility specific benefits policy that is not reimbursed by the MOH.

Many respondents indicated that MOH funds intended to cover many of the costs listed in table 5.3 were inadequate, leaving the staff no choice but to use their RDF to pay for costs associated with drug procurement. Many facilties, particularly those that provide revenue generating health services, e.g., hospitals and some urban clinics, are able to cross-subsidize and cover transport, additional benefits, and so forth, while maintaining a viable RDF. However, other facilities with a more limited revenue base and those with a high number of exempt patients are more in danger of decapitalization.

Table 5.3. Cost Items Being Covered in the Margins Charged by Different Facilities

Facility	Region	Packing	Fuel	Drivers	Night Allwnce.	Inflation	Losses	Equipment Computers	Staff Benefits	Tariffs and Vat
Central Level										
Central Medical Stores								●		●
Regional Medical Stores										
1. Ashanti RMS	Ashanti	●	●			●				
2. Brong Ahafo RMS	Brong Ahafo		●	●	●					
3. Upper West RMS	Upper West					●				
4. Upper East RMS	Upper East									
5. Greater Accra RMS	Greater Accra	●				●	●	●		
6. Volta RMS	Volta							●		
7. Central RMS	Central									
8. Eastern RMS	Eastern							●		
9. Western RMS	Western									
10. Northern Region RMS	Northern		●	●		●	●	●		●

Table 5.3. Cost Items Being Covered in the Margins Charged by Different Facilities (continued)

Facility	Region	Packing	Fuel	Drivers	Night Allwnce.	Inflation	Losses	Equipment Computers	Staff Benefits	Tariffs and Vat
Regional Hospitals										
11. Sunyani Regional Hospital	Brong Ahafo					●			●	
12. Tamale Regional Hospital	Northern					●	●	●	●	
13. WA Regional Hospital	Upper West		●	●		●				
14. Cape Coast Regional Hospital	Central					●	●			
15. Koforidua Regional Hospital	Eastern	●				●	●	●		
16. Bolgatanga Regional Hospital	Upper East					●	●			
Teaching Hospitals										
17. Komfo Anokye Teaching Hospital	Ashanti	●	●	●	●					
18. Korle Bu Teaching Hospital	Greater Accra							●	●	
District Level										
19. Mampong District Hospital	Ashanti	●	●	●	●					
20. Tamale West Hospital	Northern					●				
21. Abuakwa Health Centre	Ashanti							●		
22. Yendi District Hospital	Northern									
23. Lawra Hospital	Upper West					●				
24. Suntreso Hospital	Ashanti									
25. Oda District Hospital	Eastern					●				
26. War Memorial District Hospital	Upper East									
Sub-District Level										
27. Abessim Rural Clinic	Brong Ahafo									
28. Zuarungu Health Centre	Upper East									
29. Pwalugu Health Centre	Upper East				●					
30. Diare Health Centre	Northern					●				
31. Savalugu Health Centre	Northern					●	●			
32. Nsoatre Health Centre	Brong Ahafo					●	●			
33. Charia Health Centre	Upper West					●				
34. Domwini Health Centre	Upper West					●	●			
35. Subinso Health Centr	Brong Ahafo		●	●	●	●				
36. Aboaso Health Centre	Ashanti									
37. Moree Health Centre	Central					●				
38. Adisadel Urban Health Centre	Central					●				
39. Achiase Health Centre	Eastern					●	●			
40. Akroso Health Centre	Eastern					●	●			
41. Mamprobi Polyclinic	Greater Accra					●	●	●		
42. Usher Town Polyclinic	Greater Accra									

5.4.2 Costing Evidence

Information on the detailed costs for two RMSs, Northern and Brong Ahafo, were obtained using the costing tool in appendix 1. These costs were compared with the estimates made in two DELIVER studies (Healy 2003). The transportation and warehouse costs seem compatible although the depreciation cost for capital employed seems to be higher in the FPLM study. Using this information, table 5.4 presents a number of costs associated with storage and distribution expressed as a percentage of sales to give a cumulative RMS margin. The table presents different scenarios that reflect different assumptions as to what the margins should cover and whether any budgetary support is being provided. Scenario A assumes no budgetary support and estimates that, at the RMS level, a 22 percent margin would cover all the operating costs of warehousing and transporting drugs, including the costs of maintenance and depreciation where the RMS is running their own vehicles.

Table 5.4. Projected Margin Levels Needed to Recover Estimated Distribution Costs

Scenario:	A (%)	B (%)	C (%)	D (%)	E (%)
Total Projected	**22**	**21**	**17**	**13**	**7**
Transportation	**9**	**9**	**5**	**1**	**0**
Driver	1	1	1	1	-
Standing costs	4	4	-	-	-
Maintenance and fuel	2	2	2	-	-
Warehousing	**13**	**12**	**12**	**12**	**7**
Salaries and allowances	5	5	5	5	-
Utilities	3	3	3	3	3
Equipment servicing and paper	1	-	-	-	-
Builiding		-	-	-	-
Losses and	1	1	1	1	1
Other	3	3	3	3	3
Assumption					
RMS receives budget	n/a	Equipment and building costs	As B+ vehicle capital	As C+ transportation related costs	As D+ salaries

Notes: 1. Vehicle depreciation plus registration and licensing fees.
2. Power, light, phone, etc.
3. Estimate from one RMS suggests this amount is low.
4. No estimate were available to include in this analysis.
5. Estimate based on interview response.
6. Stationery, small equipment, inventory audits, other.

Sources: Findings from cost estimation survey, findings from transport study conducted in Jamuary 2003, and team analysis.

If the RMS is not running its own vehicle, then scenario D, with a margin of 13 percent, would be approriate. These margins do not include provision for losses and adjustments nor inflation. Losses and adjustments could add another 2 to 4 percent, implying margins of between 25 percent with transportation provided by the RMS or 16 percent with transportation provided by the CMS.

An analysis of the CMS accounts for 2001 shows that current operating costs account for 14 percent of the value of sales. Losses and adjustments were another 4 percent. Net profit made by the CMS equaled another 7 percent. This is greater than the 20 percent official margin on ICB tenders although, as noted earlier, calculations based on the sales and purchases suggests that an actual gross margin of 27 percent was made. The authors understand the 2001 accounts do not include the cost of

transportation to the RMS because the CMS did not offer a delivery service in that year. Given the CMS profit level and the accumulated CMS surplus of 6.3 billion cedis, we believe that a strategy to identify reductions in costs could offer the opportunity to reduce CMS margins below the 20 percent level. Even at present operating cost levels, a 20 percent margin would still allow the CMS to make a surplus. A more thorough analysis of CMS accounts and operations is required to identify the scope for savings and to determine the impact of the increased level of debtors. This has doubled each year for the past four years and, what is not clear from the information provided, is the age of these debtors and what provision needs to be made for bad debt. Default by debtors would undermine the CMS balance sheet.

5.5 Impact of Inflation and Exemptions on Margins

Four factors determine how large an adjustment is required to margins to account for inflation:

- monthly inflation rate (I)
- proportion of sales either given on credit or given to exempt patients (C_i)
- length of time delay in months for either payment or reimbursement between the levels of the distribution system (P_i) where *i* = the level of the distribution system
- procurement lead time (LT)

The margin adjustment factor (MF) can then be calculated at each level *i* as—

$$MF = f_x(I, LT, C_i, P_i)$$

We can estimate the necessary margin adjustment factor for inflation at each level by taking the May 2003 monthly inflation rate of 2.5 percent and ignoring procurement lead time for now, and using information about average repayment delays and the proportion of sales given on credit by the CMS or RMS and given to exempt patients for the SDPS. Table 5.5 provides some illustrative examples based loosely on the types of payment delay and the proportion of credit or exemptions given at different facilities.

Table 5.5. Illustrative Margin Adjustment Factors for Inflation

Distribution Level	Average Payment Delay (P_i)	Proportion Given on Credit That Is Reimbursed (C_i)	Assumptions	Margin Adjustment Factor (MF) (%)
CMS	3 months	0.5	50% of RMS pay in cash	3.75
RMS A	1 month	0.5	50% of SDPs pay cash 50% pay after one month	1.25
RMS B	3 months	0.6	60% SDPs do not have cash to pay	7.5
RMS C	6 months	1	All SDP payments are on credit	15
SDP A	6 months	0.3	30% exempt patients	4.5
SDP B	8 months	0.5	50% exempt patients	10
SDP C	8 months	0.8	80% exempt patients	16
Combined impact of CMS + RMS A + SDP A	3 months + 1 month + 6 months	0.5 0.5 0.3		9.5 Cumulative inflation factor
Combined impact of CMS + RMS C + SDP C	3 months + 6 months + 6 months	0.5 1 0.8		34.75 Cumulative inflation factor

These illustrative results actually reflect the situation observed at different RMSs and SDPs. With a given inflation rate, they show that the margin adjustment factor for inflation is a function of differences in internal management discipline, payment delays, and the number of exempt patients being served. RMS that do not exert management discipline on their client SDPs are likely to have a higher level of delayed payments. SDPs that have a higher proportion of exempt patients are more at risk to reimbursement delays. As evident in the next section, part of the reason for delayed reimbursements is that the SDPs themselves are not submitting timely reports back to the RHA. Where poor management and high exemptions are combined at the RMS and SDP level, the cumulative inflation adjustment factor needs to be higher than when better management and lower exemptions are observed.

Some of the variation in prices observed within and between regions is clearly a function of these factors. Facility managers are adjusting their margins to cover the high level of credit and exemptions and the delays in payment. To what extent can these factors be managed, controlled, or reduced? An effective manager addresses those factors within his or her control while identifying strategies to offset the effects of those factors outside their control.

At the CMS and RMS level, the credit terms given to their respective clients represent one financial management factor that can be controlled. For example—

- If the CMS only allowed cash payment or 30-day payment terms, then the inflation adjustment would be zero or 2.5 percent. By providing credit during periods of high inflation, the CMS increases its costs and has to increase its margins.
- Similarly, in regions like the Volta Region where 50 percent of SDPs pay cash and another 50 percent are one month in arrears, the adjustment factor is only 1.25 percent. Other regions that are extending long credit periods to their SDPs require a higher margin adjustment factor.

Another strategy would be to charge clients a higher price or interest for credit payments.

Similarly, at the SDP level, timely submission of exemption reports and careful management of exemptions given are within the SDP management control. What is outside their control are the reimbursement delays from the GHS/MOH to the RHA and RHA to the SDP.

If we add procurement lead times, this adds 2.5 percent for every month required for procurement. At the CMS level, as ICB purchases are made in foreign currency, the CMS should set aside foreign exchange at the start of the procurement process as a hedge against inflation. For the RMS and SDPs, a three-month procurement cycle is typical, thus adding a 7.5 percent to inflation margins. Shorter procurement lead times could offset this cost. If monthly ordering were possible, only a 2.5 percent margin would be needed.

In section 7, we report on the financial management strategies being adopted to address these issues.

5.6 Recommendations

Official margin policy provides CMS with too large a margin and RMS and SDPs with too small a margin to cover their costs and inflation adjustments. We have seen that the margins actually being charged are far higher than the officially permitted margins. For the CMS, if they moved to a cash-on-delivery system while buying their foreign exchange forward, they would be able to operate on margins of less than 20 percent. Compared to the CMSs in other countries, this indicates that margins of 17.5 percent (Tanzania) are sufficient to cover overhead and delivery to the district level. The 15 percent margin on local purchases should be reduced considerably to ensure the CMS is more competitive with direct supply by the suppliers to RMS and SDPs. A 5 percent margin on local purchases could be considered if there are no delays in payment from RMS that requires inflation adjustments.

At the RMS level, better management of SDPs, combined with shorter procurement lead times, could enable them to operate at margins of 20 percent. While greater than the officially permitted 10 percent, this is lower than the margins actually being charged by different regions.

To allow the RDF to maintain real value, inflation adjustments need to be higher the longer the delays in reimbursing exemptions. While SDPs can improve the management and reporting of exemptions, reimbursement delays are also caused by funding failures from the GHS/MOH. A six-month delay would require inflation adjustments between 4.5 percent and 15 percent depending on the number of exempt patients. If three-month delays were possible, margins would have to be half this much. Assuming a one-month procurement cycle and minimal storage costs, a margin of 10 percent is only likely to be sufficient either where the number of exempt patients is less than 30 percent or reimbursement delays are three months. The longer the delay in payments and the higher the number of exempt patients, the higher the SDP margins would need to be, possibly as high as 20 percent.

Improving financial management and payment of invoices through the system will reduce the need for inflation adjustments in margins at each level.

6. Exemptions

6.1 Background

In the 1980s, the Ghana MOH adopted a comprehensive exemption policy to address equity and affordability in its user-fee system. The policy was developed after the MOH realized that user fees for health services and pharmaceuticals were a signficant disincentive for the poor and other vulnerable groups to seek adequate healthcare. This concern was, to a degree, validated by a 50 percent drop in patient attendance at the Korle-Bu Teaching Hospital when user fees were introduced for health services (Garshong et al. 2001.).

The current MOH categories of exemption covers both individuals, specific diseases, and classes of drugs. The exempt include persons over 70 years of age; antenatal; children under 5; the indigent; patients with TB, leprosy, Buruli ulcer, and cholera; snake bite and dog bite victims; and people with psychiatric disorders. Recently, accident victims have also become an exempt category.

The issue of exemptions, particularly exemption refunds due back to service facilities is well documented. Without both, the proper procedures being followed at the SDPs to receive exemption reimbursements and the timely processing of those reimbursements by the regional health authorities, RDFs at service facilities will become quickly decapitalized. The objective of the pricing study regarding the exemptions issued was to determine how the exemption process is working, including awareness of the exemption policy, implementation at the SDP level, and determining if, when, and how to maintain capitalization of the RDF.

The qualitative survey focused primarily on three exemption-related issues. (1) the awareness on the part of facility staff (at all levels) of the current MOH exemption policy; (2) the incidence of exemption reimbursements and timeframe; and, (3) how facility exemption policies and efficiency of reimbursements are affecting the capitalization of the facility-based RDFs.

6.2. Exemption Policy Awareness and Practices

Public facilities at each level of the distribution chain were asked if they were aware of the MOH exemption policy and the specific criteria within that policy. The interviewers further attempted to determine what non-standard exemption policies might exist that were unique to the facility.

A majority of the facilities surveyed indicated that they were aware of current exemption criteria, and that this policy is carried out at their facility. Yet, similar to the case of mark-up percentages, the study found that, while aware of the exemption policy, several facilities implemented it quite differently.

- The Sunyani Regional Hospital indicated, for example, that they do not provide exemptions. The alternative for those clients seeking exemptions from payment was the District Hospital.

- Alternatively, the Regional Hospital in Bolgatanga does grant full exemptions in line with MOH policy.

- The Komfo Anokye Teaching Hospital in Ashanti indicated that they do not provide exemptions to antenatal patients.

- A number of district and sub-district level facilties visited also indicated that they stopped providing exemptions during 2002 due to delays in receiving exemption reimbursements.

The Korle Bu Teaching Hospital and the War Memorial District Hospital in Upper East provide exemptions to staff knowing that these exemptions do not meet the standard criteria and, thus, do not warrant exemption reimbursements. The Upper East District Hospital, in particular, provides an example of a unique facility exemption policy designed to retain staff, as its policy allows exemptions for all family members. The implication for the RDF at both these facilities is clear: each facility will see an erosion in the capitalization of its RDF by granting exemptions that will not be reimbursed by the regional health authorities.

6.3 Exemption Reimbursements

It is no doubt critical for service level facilties to have a viable RDF in order to maintain needed drug procurements for clients. To this extent, facilities that issue signficant drugs to clients as exemptions are much more dependent on the timely receipt of reimbursements than those generating direct revenues from sales. As table 6.1 indicates, five facilities reported that they have been reimbursed 100 percent for all outstanding exemptions for 2002. In addition, many report that upward of 70 percent of issued exemptions were reimbursed in a timely manner, e.g., not affecting their capacity to do their next procurement. The two SDP-level facilities included in the five were both located in the Upper East region, where the incidence of full exemption reimbursement appears to be higher than the other regions surveyed. This could be due to the use of the poverty alleviation fund to cover exemptions as Upper West had done to offset mounting bills of health facilities that were owed the RMS.

Conversely, five facilties, scattered throughout levels in the system, report that they have not received exemption reimbursements for 2002. Two of these five facilties, including Oda District Hospital in the Eastern region, reported that they had stopped issuing exemptions to clients mid-year because the absence of reimbursements was affecting their ability to conduct procurements.

Of those facilities reporting exemption reimbursements, the maximum timeframe from submission to receipt is six months. The minimum, reported by the Bolgatanga Regional Hospital, is two weeks.

The Volta and Central region RHAs reported processing 100 and 80 percent, respectively, of the exemption requests made to those facilities during 2002, while the Eastern region RHA reported only processing 40 percent of exemption requests. Further data collection efforts will be made at the Upper East, Upper West, and Brong Ahafo RMS to determine the percentage of exemption reimbursements.

Table 6.1. Exemption Data from Qualitative and Quantitative Survey (2002)

Facility	Region	Exemptions					
Regional Hospitals		**% of sales**	**Issued (million cedis)**	**Received (millions cedis)**	**Total Sales (millions cedis)**	**Reimbursed (%)**	**Timeframe**
3. WA Regional Hospital	Upper West		552	380		69	3–6 mos.
4. Cape Coast Regional Hospital	Central		165	41		25	3 mos.
5. Koforidua Regional Hospital	Eastern		72	34		47	
6. Bolgatanga Regional Hospital	Upper East	30				100	monthly
Teaching Hospitals							
7. Komfo Anokye Teaching Hospital	Ashanti		18.0	-	7,000.0	0	
8. Korle Bu Teaching Hospital	Greater Accra	20	-	-	-		2 mos.
District Level							
9. Mampong District Hospital	Ashanti		14.0	7.0	396.0	50	4–6 mos.
10. Tamle West District Hospital	Northern		355.0	180.0		51	6–7 mos.
11. Abuakwa Health Centre	Ashanti		1,500.0	50.0	-	3	3–6 mos.
12. Yendi District Hospital	Northern		400.0	178.0		45	4–6 mos.
13. Lawra Hospital	Upper West		157.0	120.0		76	5–6 mos.
14. Suntreso Hospital	Ashanti		48.0	18.0		38	3 mos.
15. Oda District Hospital	Eastern		56.0	-		0	
16. War Memorial District Hospital	Upper East	60	-	-	-	100	
Sub-District Level							
17. Abessim Rural Clinic	Brong Ahafo		-	-	-	100	2–3 mos.
18. Zuarungu Health Centre	Upper East	70	-	-	-	50	3–4 mos.
19 Pwalugu Health Centre	Upper East	80	-	-	-	100	1 mo.
21. Savalugu Health Centre	Northern		135.0	135.0		100	5–6 mos.
22. Nsoatre Health Centre	Brong Ahafo	5	2.5	-	-		3–4 mos.
23. Charia Health Centre	Upper West						6 mos.
25. Subsinso Health Centre	Brong Ahafo		13.0	-		0	
26. Aboaso Health Centre	Ashanti		14.0	6.0		43	3–6 mos.
27. Moree Health Centre	Central		12.0	7.0		58	
28. Adisadel Urban Health Centre	Central		16.0				
29. Achiase Health Centre	Eastern		12.0				
30. Akroso Health Centre	Eastern		7.0	-		0	
31. Mamprobi Polyclinic	Greater Accra		44.0	-		0	
32. Ussher Town Polyclinic	Greater Accra		130.0	91.0	-	70	irregular

6.4 Exemption Impact on the Revolving Drug Funds

From the qualitative data, a signficant issue raised by a number of district and sub-district level facilties is that the implementation of the exemption policy is becoming increasingly difficult to manage. As stated earlier in this section, the exemption categories are broad and encompass people, diseases, and drugs. For example, what criteria do the facilties use to determine who is indigent and who is not? While hard data was difficult to obtain, a number of rural clinics reported 70 percent and greater levels of exempt clients as a percentage of overall sales. The impact on their RDF, and thus their ability to conduct procurements, is pronounced when exemptions reimbursements are partial or delayed.

It is difficult to focus on one cause for the delay in reimbursements. Four RMS/(RHAs) surveyed indicated that late submission of exemption requests are causing the delay of payment to SDPs. Three of those RMS also stated that inadequate forecasting and management at the SDP level is also a contributing factor to absent or delayed reimbursements. Therefore, it is certainly important to examine procedures. Yet, despite the factors, the absence of and delay in exemption reimbursements is significantly increasing facility debt and contributing to decapitalization.

Exemption administration is handicapped by weak control and supervision. Health facilities tend to include *beneficiaries of all shades* and this tends to inflate the number and cost of exemptions. Where RHAs scrutinize the exemption requests thoroughly, for example, the Volta region's over-claiming is being identified and claims disqualified (see box 6.1).

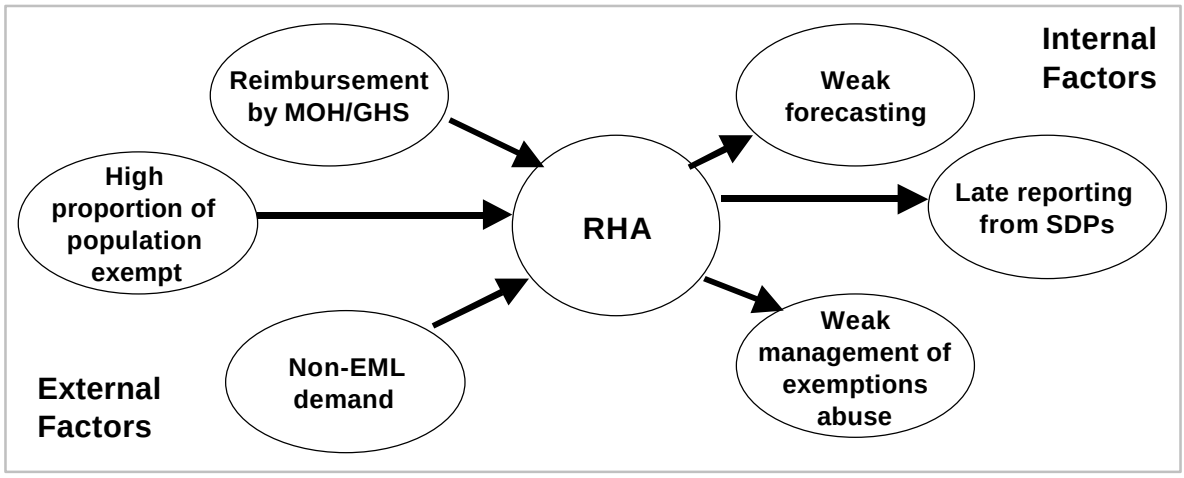
MOH/GHS staff are, by default, civil servants and entitled to free medical care. Funds released by the Government of Ghana (GOG) for the Regional Civil Servants Associations are handled differently. While some regions divide and share the fund on a pro-rata basis, some lodge the fund at the RHAs and collect bills of civil servants attending these health facilities and pay the facilities. Often the fund gets exhausted and the free treatment stops until the next allocation arrives. Inflows are very erratic.

Exemptions management would be strengthened with the introduction of a national health insurance card to provide a database of registered beneficiaries of the exemptions package. Strengthened monitoring and supervision would then be required to ensure the exemptions policy is being applied correctly.

6.5 Synthesis of Issues and Recommendations

Management and financial problems have been experienced with drug exemptions ever since the cash-and-carry system was first introduced. The report of the Annual Health Sector Review 2002 (McIntyre 2003) identified that delays in reimbursement were undermining the application of exemptions by many facilities. It also identified that the exemptions are not necessarily being targeted to the poor but rather to all under-5s, antenatal care, and over-70s. Our analysis identified a number of typical interrelated problems that are undermining the working of the exemption system (see figure 6.1).

Figure 6.1.
Factors Contributing to Exemptions Reimbursement Breakdown



The factors causing the exemptions system to breakdown can be divided into those that the various RHA can influence directly through their own action and those that require the intervention of the MOH/GHS.

Actions within the control of the RHA include—

- Forecasting likely exemptions needs and how they can be prioritized. Forecasts can be based on past experience and a per capita estimate of how many facility visits per member of the population are likely—the typical case load. The resources needed to treat this case load can then be estimated.

- Actively manage SDPs and Districts to ensure prompt reporting of reimbursement claims while withholding payment until necessary reports are submitted.

- Monitoring exemption claims and comparisons to forecast assumptions, and proactive analysis and investigation of claims that fall outside expected standards.

The experience in the Volta region would be instructive. Their experience suggests improved financial management systems can improve certainty, reduce abuse, and improve cash flow. Box 6.2 summarizes the approach adopted in the Volta Region to exemption management and reimbursement.

While improving internal management, the RHA will need to address the following issues with GHS/MOH:

- Late and partial payment by the MOH and GHS of agreed-upon exemption budget.

- The high proportion of exempt patients in the northern regions and the targeting of exemptions to those most in need rather than by age or health status. Either exemptions are redefinitions or there is an increase in monetary transfers for those regions most in need.

- Support from the GNDP to work with providers and patients on increasing information and promoting rational drug use.

The resource allocation issue was also identified in the *Report of the Annual Health Sector Review 2002*.

Box 6.1. Experience of the Volta Region of Exemption Reimbursement Management

Volta RHA, using existing staff and without the benefit of external TA, has created a proactive management culture and systems for managing exemption reimbursement. Using careful financial planning, management, and supervision. The creation of the management discipline installed in Volta region took time and, initially, faced resistance. Local health managers at first did not want to complete reports on but this was overcome with constant pressure and attention and linking payment of exemptions reimbursement to timely submission of reports. Now the culture is ingrained, and is being sustained despite staff turnover.

The Volta RHA sends accountants into the field to check that exemptions are being paid. All districts and hospitals have computers and use spreadsheets to show patients treated and costs incurred. These are compared with average costs to check vailidity. If any claim is too high, the RHA conducts an internal check, including a field visit, if necessary. In one recent case, where abuse of claims was identified, there were repercussions for the personnel at the facility.

Improved financial management is encouraging the SDPs to submit their claims on time. This helps improve the timeliness of financial information to guide decision making and reduces reimbursement delays.

The RHA also has a policy of getting facilities to pay up front and to abolish credit from RMS to the SDP level. Half have managed to do this while the rest pay one month in arrears. Because of distance from the facility to the RMS means they cannot get a check to the RMS more quickly. i.e., they pick up from the stores monthly and send a payment for deliveries at the next trip.

The result in the Volta Region has been that a high percentage of exemptions are being reimbursed while the RMS does not have any debtors longer than one from its SDP clients. Their experience suggests improved financial management systems can improve financial certainty, reduce abuse, and improve cash flow.

The approach at the Volta RHA should be reviewed, documented in more detail, and rolled out to other regions through training. To be successful, other regions will need to capture the proactive management culture and reinforce this, as well as follow policies and procedures.

7. Financial Management

The qualitative survey provided information regarding three major aspects of financial management:

- the sources of funding available to facilities for managing drug resupply
- the strategies used to manage the funds and prevent decapitalization
- some general recommendations to improve the current financial management challenges.

7.1 Sources of Funding and Surplus

The major source of funding reported by facilities is the revenue generated from mark-ups when drugs are sold (to lower levels, SDPs, or end users). Most SDPs also reported that they expect a proportion of the drug resources to come from reimbursements for exemptions provided. In the Ashanti region, SDPs also expect reimbursements from the Regional Health Administration for drugs provided to civil servants enrolled in a regional health insurance program. These expected reimbursements partly account for accounts receivables for drug funds at the RMS and CMS levels, which were reported as credit lines extended by RMS and CMS to their lower levels.

While some facilities use a portion of their sales revenues to cover costs that are indirectly related to their drug distribution, such as drug packaging and transportation (as reported elsewhere), some facilities reported that they received internally generated funds from services to cover these costs. One facility also mentioned receiving central government funds to cover the cost of exemptions provided to staff or civil servants. This cross-subsidization to cover costs related to drug management is much more easily accomplished by those facilities, with a vibrant service delivery program, such as hospitals and large urban clinics. Most clinic staff, however, stressed that sources of funding for drug procurements and associated costs were limited to sales and exemption reimbursements. Although salary and major capital investments, e.g., buildings and computers, are covered by separate MOH budget lines, these are seen as inadequate. Facilities, therefore, are forced to use their RDF, not only for procurements but for ancillary costs such as maintenance, air conditioners (for warehouses and offices), and transport. Based on the qualitative surveys, this is seen as a major cause of RDF decapitalization.

Some facilities reported having some surplus funds, although others reported no surplus or breaking even.

7.2 Strategies for Preventing Decapitalization

While some facilities indicated that they did not have a problem with (the risk of) decapitalization, others reported using three major strategies for managing their drug funds and specifically avoiding decapitalization:

Negotiation and communication with suppliers: Some facilities stated that obtaining credit lines from suppliers has allowed them to meet their drug needs without going in the red for cash. Another example of a strategy used with suppliers involves being in constant and regular communication with suppliers in an effort to anticipate and deal with any future price changes.

Procurement based on cash not demand: Difficult financial predicaments have led several facilities to base their procurement and purchase practices primarily on the cash they have available versus on the demand or inventory management needs (i.e., not programming for any buffer stock or minimal levels). This means that facilities have had to make *partial procurements*, often on a monthly basis or, in dire cases, on a quarterly basis when sufficient funds have accumulated to make a procurement. One facility mentioned resorting to emergency ordering to ensure a minimal supply of drugs. Looking for long product expiry dates was also mentioned as a way to minimize the loss of valuable drug funds.

Implementing financial management: Facilities reported implementing several financial management practices to reduce the risk of decapitalization, including—

- Avoiding (high interest) credit lines where possible.
- Implementing a more rigorous mechanism for recovery of debts owed to facilities (primarily for exemptions).
- Streamlining the product collection process (mentioned as a strategy used by CMS when interacting with RHA).
- Using supervision and tight financial management.
- Increasing drug mark-up levels/mark-up adjustments on a rolling basis.[4]

Expanding the use of credit facilities: To conduct demand-based procurements and to ensure essential drugs are in full supply, a number of facilities reported the increased use of credit facilities at both the RMS and private suppliers. This management practice, however, only masks the reality of an undercapitalized RDF. As the facility's debt grows, RMS and private suppliers either halt further credit expansion or only partially fill procurement orders. This practice also has a ripple effect throughout the system as the cash flow at the RMS level becomes constricted due to the granting of large credit facilities to SDPs.

As table 7.1 shows, where data was available, six RMSs reported signficant credit granted to lower level facilties. The Eastern, Upper West, and Upper East RMSs have currently extended credit to lower level facilities that represents two to four months of procurements, which could be made (at their average rate of monthly procurement). These amounts are equivalent (and in the case of Upper West RMS greater than) procurement levels that can be achieved through monthly cash funds available at the facility. The net effect for these facilities, in terms of managing decapitalization, is that they either have to procure less than demand or request additional credit facilties from CMS or private suppliers.

[4] One district hospital reported that it raised its mark-up rate from 10% to 26% during a period when its RDF was in danger of decapitalization. It decreased its rate to 10% after the RDF was adequately capitalized for procurements, and it had received additional exemption reimbursements.

Table 7.1. RMS Capitalization

	Months Of Stock That Can Be Purchased With—				
(000 cedis, 2002)	Debt (creditors)	Credit (debtors)	Cash on hand	Cash on hand (1)	Credit due to facility
Central Level					
Central Medical Stores	0	14,987,869	7,484,891	2.2	4.3
Regional Medical Stores					
1. Ashanti RMS					
2. Brong Ahafo RMS	281,797		715,338	3.5	
3. Central RMS					
4. Eastern RMS	874,847	824,403	1,077,235	3.3	2.5
5. Greater Accra RMS	737,331	440,385	1,834,813	7.0	1.7
6. Northern RMS					
7. Upper East RMS	239,028	337,415	272,148	2.3	2.9
8. Upper West RMS	—	385,707	254,099	3.0	4.5
9. Volta RMS	408,164	270,120	1,814,777	6.3	0.9
10. Western RMS	374,114			—	—

Note: 1. Not deducting debt owed by facility.

Source: Findings from quantitative survey and team analysis.

7.3 Recommendations for Improving Financial Management

The following summarizes the recommendations made during qualitative interviews:

- *External/MOH financial support*: Suggestions ranged from more frequently recapitalizing drug funds at lower levels to receiving more reliable funding for drug distribution related costs such as transportation. Reduction of margins charged by CMS was also mentioned. One facility emphasized the need for more rigorous debt collection for exemptions (already implemented by some facilities), and a role for the RHA to review the potential root causes for current delays.

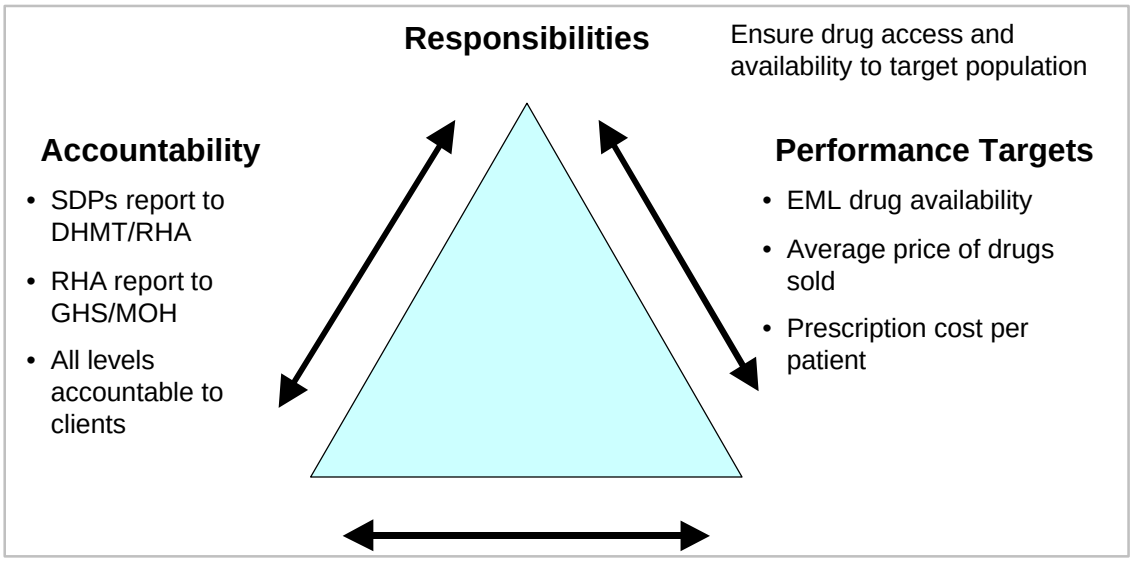
- *Management training/strengthening:* Possible areas for training include quality control (for evaluating drugs specifications), procurement, and general management. Holding managers accountable while also providing them with financial incentives was another recommendation facilities made. The need for upgrading the information technology (IT) system capacity was also mentioned.

- *Private-public policy:* Some interviewees suggested that more competition should be allowed between private and public suppliers, including enhancing the independence of lower level facilities in making procurement decisions, e.g., buying from local, private suppliers.

- *Monitoring of lower levels:* The basis for this recommendation is the need to take a proactive problem-solving approach to addressing potential financial difficulties. The recommendation recognizes that financial challenges faced by SDPs will also affect the financial status of higher-level facilities that rely on cash revenue from sales to SDPs to make their procurements.

The relationship between responsibility for management decision making, performance targets, and accountability is a key theme. Figure 7.1 summarizes how these good management practices could be applied to different levels in the distribution system. This is based on the *New Public Sector Management Approach* described by R. Paul Shaw.

Figure 7.1.
Strengthening Public Sector Management in the Drug Distribution System



Clear responsibilities need to be defined for managers at all levels of the health commodity distribution system. These responsibilities need to be realistic given resource availability, work loads and staff qualifications, and experience. Managers should only be assigned responsibilities for things they can actually manage. In the case of the RMS managers, their prime responsibility should be to ensure that SDPs in their region have access to necessary essential drugs specified on the EML, at affordable prices.

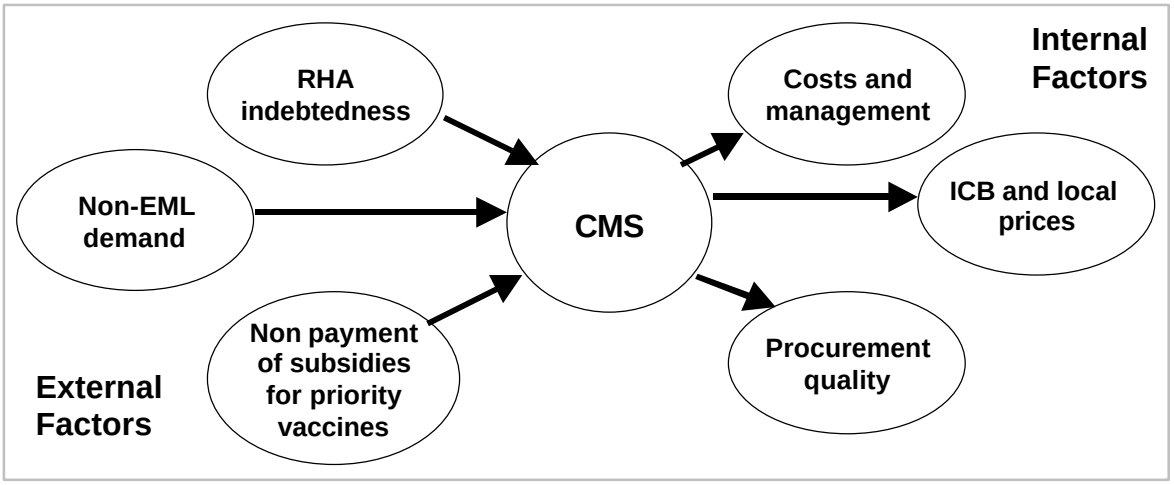
Performance targets should reflect how the manager performs in meeting his or her prime responsibility. They should be easily verifiable, transparent, and simple to collect. EML drug availability may be one indicator but this does not capture whether patients are actually using these drugs. Additional indicators, such as the average price of tracer drugs sold for RMS and the cost per prescription for SDPs, would help confirm affordability.

Accountability requires that the performance of the manager is monitored, analyzed, and some mix of rewards and sactions applied for succesful or poor performance. Accountability should be both upward and downward. So, while an SDP must be accountable to the DHMT and the RHA, it should also be accountable to the community it serves. Similarly, an RHA needs to be accountable to the GHS/MOH as well as regional community representatives. These lines of accountability need to be defined along with the rewards and sanctions. It is important that the latter are applied to the manager rather than the facility.

7.4 Strengthening CMS Management

We have discussed several different aspects of CMS operations in the preceeding four sections. This section brings together several constraints already mentioned to facilitate identification of remedial action to improve CMS operation. As with the earlier analysis of the exemption system, it is instructive to summarize these constraints into those internal factors the CMS can address directly by itself and those that are external to it but impact on its operations and efficiency. These are illustrated in figure 7.2.

Figure 7.2.
Central Medical Stores Decision Space



CMS should address a number of internal factors to reduce costs, increase efficiency, and reduce margins, including—

- Reviewing management responsibility and performance, reviewing operations efficiency and working practices to identify scope for improvements and cost savings. Wastage levels should be reviewed and action taken to reduce spoilage and waste. Credit procedures and control should be reviewed and greater efforts made to control RMS indebtedness, moving toward a 30-day payment norm. Continued efforts should be made to be more proactive with their client base, including product delivery services to RMS, increasing communication, and information on stocks and prices.

- Working with the procurement unit, greater attention should be paid to product quality rather than price in awarding ICB. Try to continue reducing procurement lead times. Ensure more efficient procurement and guarantee availability of EML items. Set aside, buy forward, or hedge foreign exchange to reduce inflation losses during procurement lead times

- Compare, document, and disseminate information on prices obtained through ICB compared to other international and local prices.

Table 7.2 lists the factors outside the CMS control that need to be addressed by GOG and the strategies CMS needs to develop to help address them.

Table 7.2. GOG and CMS Action to Address Identified External Factors

Area Outside CMS Control	GOG Action	CMS Strategy
RMS indebtedness	Improve regularity of cash flow to the whole health system and address back-log of payments owed CMS by RMS and owed RMS from SDPs.	Move toward 30-day payment terms.
Non-EML demand	Institutionalize and empower GNDP to continue its important work promoting rational drug use and consumer education about generic versus branded products.	CMS works with RMS to reinforce EML drug use with support from the GNDP.
Non-payment of subsidies for anti-snake bite serum and anti-rabies vaccine	MOH/GHS needs either to pay its commitments for these subsidized commodities or recognize the cost of this subsidy to CMS, in terms of higher margins for other drugs.	CMS needs to demonstrate the cost of this subsidy and how much this costs the health system in higher margins on other essential drugs. This amount should be expressed as an explicit percentage of CMS turnover.

8. Policy Implications

8.1 Defining the Pricing Policy Framework

Before presenting pharmaceutical policy options, we need to define the framework that will guide them. This should incorporate and address—

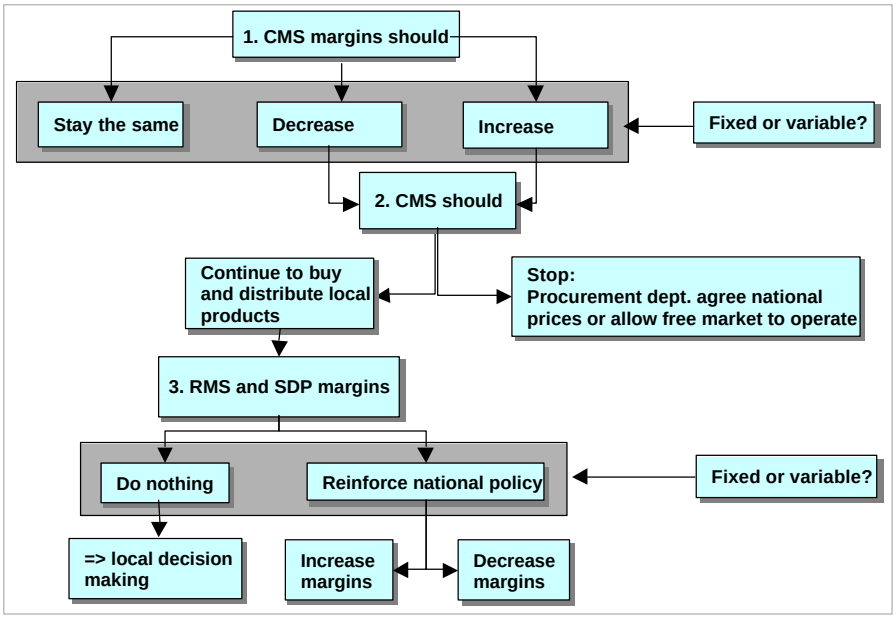
- National policy objectives, with respect to the EML, and sustainability and equity objectives of the Second Health Sector Five Year Sector of Work.
- What margins should cover at each level and what subsidies should cover.
- The balance between national standards and objectives and decentralized local decision making by BMC at each level; and the balance between the autonomy of each BMC and their accountability to the MOH and GHS.

Pricing policy needs to define—

- Level of price margins at each level.
- What these margins are meant to cover.
- Local management flexibility in persuing variable margins and cross subsidization.
- Incentives for rational drug use.

Figure 8.1 illustrates several policy scenarios that can be considered.

Figure 8.1.
Policy Options



Before examining these options, we will review the impact that pharmaceutical pricing policy will have on the proposed National Health Insurance Fund.

8.2 National Health Insurance Fund

8.2.1 Background

The Ghana Health Service (GHS) and MOH are presently preparing a policy framework for the implementation of the National Health Insurance Fund (NHIF). A three-day internal workshop was held beginning on 26 February 2003 to review NHIF operations issues, and support has been offered by the ILO in undertaking an actuarial study to help prepare the NHIF. A key concern for the NHIF is that uniform prices and quality should be available to all members, and these should match what is available in the market place. The goal of the scheme is to encourage the participation of private pharmacies in the NHIF scheme to improve access to drugs; if the facilities are stocked out, patients can take prescriptions to private pharmacies. Pharmacies will be reimbursed by the NHIF with the patient possibly making some co-payment, to be decided. Exempt patients will have a voucher that will exempt them from any payment. The cabinet will make an announcement after the rules and regulations are decided. Treatment benefits will be based on standard treatment guidelines and the challenge will be to monitor how these are applied. Purchasing of drugs will be decentralized as it is at present.

The role of the NHIF will be to manage exemptions, reinsure, and develop a risk equalization formula between districts. There will be four sources of funding:

1. Formal sector workers will have their NHI contribution deducted at the source, with the funds collected centrally to be distributed to the districts.
2. The current idea is for the Social Security Scheme to contribute 2.5 percent from the 17.5 percent it already deducts to contribute to the NHIF, in addition to a new formal sector NHI levy. These combined sources will not cover the full cost of services.
3. Informal sector contributions will need to be collected at the district level by the Community Based Schemes (CBS).
4. Government will contribute from general taxation to fund exemptions, including provisions for the indigent.

Drug benefits will be based on the Essential Drug List. A team is presently being formed to look at the definition of the benefits package, including drugs. A drug co-payment is likely but will be decided later.

8.2.2 Pricing Study Findings Relevant for the NHIF

Initial findings from the pricing study suggest that a number of issues need to be addressed in the NHIF design and implementation. Initial conclusions from the pricing study will seek to address both the new policy and the practical implementation of policy change. Key points are summarized below and will address these in the final report following feedback from the MOH.

Decentralized drug procurement has given facilities greater freedom to choose what and from where they purchase drugs. This freedom, combined with inadequate rational drug management, has allowed continued irrational prescribing outside the EML. The prescribing of non-generics by doctors partly explains why facilities are looking outside the CMS and RMS distribution system to obtain their

drugs. Using the NHIF drug benefits and the associated drug reimbursement list can give an important incentive for rational drug use. Prescribing patterns will need to be actively monitored and irrational prescribing identified and acted on, as identified by the evaluation report of the Ghana National Drugs Programme. The same issue applies to the application of standard treatment guidelines.

Reimbursement of drug benefits should be linked to the generic price of drugs with margins based on the findings of the pricing study. Prices would need to be reviewed regularly to reflect inflationary pressures. Any difference between the price of drugs on the price list and branded equivalents should be borne by the patient. Patients should be given information at each facility to ensure they are aware of product choices when prescriptions.

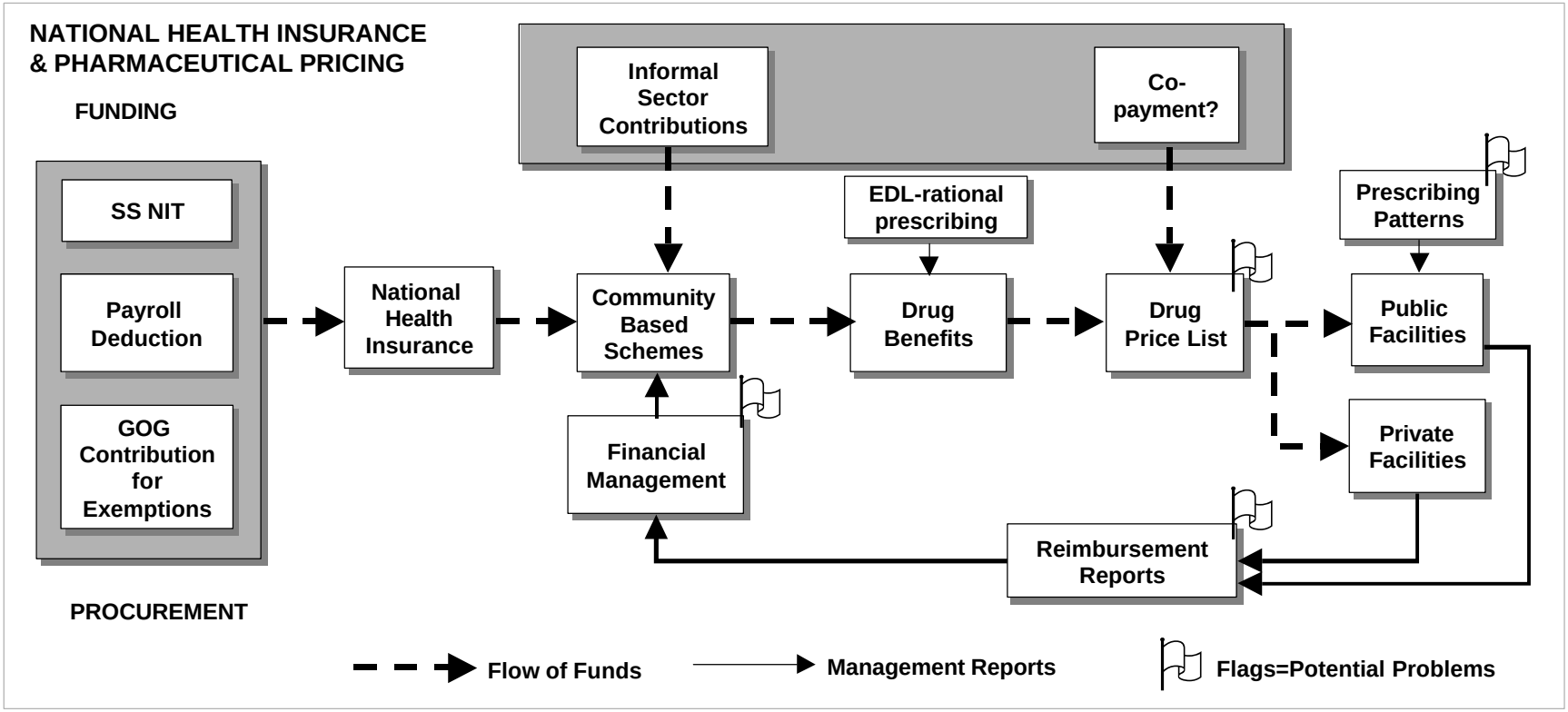
Delays and management of reimbursement of exemptions have been a major factor in the decapitalization of revolving drug funds in Ghana. In other countries, slow and incomplete reimbursement of public and private facilities has been a major problem affecting the sustainability of health insurance schemes. Private sector participation will only be achieved if reimbursement is prompt. Similarly, careful management by the NHIF and the CBS will be essential if they are not to be decapitalized by excess claims. This will require a level of sophistication in health budget management only seen in the Volta region during the present study. Most other Regional Health Authorities (RHA) have been unable to manage their exemptions refunds adequately, leading to cascading debts to the CMS from the RMS and from the SDPs to the RMS. Given the uneven performance of the longer established RHA, the capacity of the CBS to undertake the necessary management of their revenue collection, expenditure, and reimbursement must be a concern.

The financial management capacity at most facilities, particularly polyclinics and other primary health facilities, is limited. This is reflected in the slow rate of submission of exemption claims from the SDPs to the Districts to the RHA. The inability of many facilities to undertake necessary financial management contributes to their cash flow problems and drug stockouts. This situation needs to be addressed if the NHIF is to be sustained.

Presently drug and non-drug exemptions reimbursements are lumped together when the RHA is paid. How this money is then disbursed to the various facilities in a region is discretionary. Where reimbursement was less than actual submissions, examples were given where non-drug costs were funded first, to the detriment of drug reimbursement. If this pattern continues with the NHIF, drug stockouts can be expected as drug funding shrinks.

An indirect impact of the NHIF will be to increase competition between the public and private sector as patients have an increased choice in where they get their drugs. The pricing study report will try to address this issue.

Figure 8.2.
National Health Insurance Policy Fund Issues



8.3 Summary of the Present Policy Environment

Before presenting possible policy options, we will summarize the present status quo based on the mix of existing policies and how these are being applied or, in some cases, ignored (see table 8.1).

Table 8.1. Policy Options for Key Pharmaceutical Pricing Variables

Policy	Policy Status Quo	Commentary
Drug Selection		
National EML drug price list	Do not maintain a national drug price information list.	Presently no source of pharmaceutical prices except those provided by individual suppliers. One option would be to create a national drug price information list with information, without analysis or comment on quoted drug prices from different international and local sources. Could be modeled on the drug price information from the British National Formulary and also from USAID RPM Plus drug price information.
Rational prescribing from the EML	Apply present policy without monitoring, enforcement, or accountability.	Prescribing of non-EML drugs by doctors and patient preferences for non-EML have lead SDPs to seek non-EML drug sources.
Drug Margins		
Margins should…	Be subsidized by the government with the margin covering only the variable cost excluding transportation.	Margins presently only cover part of total cost of distribution. At most levels, the cost of buildings, equipment, transportation, and staff salaries are covered separately as part of GHS/MOH budget. From an economic view point, GOG should know the true cost of the distribution system even if it continues to pay for part from its direct budget rather than through margins.
CMS margins…	Stay the same.	CMS is presently meant to charge 20% on ICB purchases and 15% on local charges. The last set of 2001 accounts indicate a gross margin of 27%. This suggests ability to reduce margins while covering operating costs.
CMS costs…	No explicit cost controls, financial management being undermined by increasing debtors.	CMS financial management has begun to improve. While financial statements have been prepared, accounts have not been audited for several years. Scope for cost savings needs to be identified but any effort to improve financial performance will require repayment of money owed by the RMS.
RMS and SDP margins…	Do nothing, allow de facto decentralized margin setting and variation in prices to continue.	While the 10% margin rule is known, it is not being applied. Drug prices vary considerably between and within different regions in Ghana with an adverse effect on the equity of access for the poor. In several cases, SDPs appear to match their prices to those in private pharmacies as this indicates the price the market will pay for a product.
Type of margins…	Fixed percentage margins applied.	Best practice from the private sector suggests a variable margin policy with lower margins for high value and fast moving products and higher margins for cheaper, slow moving products can be applied. Some RMS and SDP already use this commercial-like pricing approach to cross subsidize more expensive items.
Inflation adjustment…	No inflation adjustment or analysis.	Decapitalization of RDFs has been a major problem during high inflation. When added to payment delays, RDFs have been able to fund a smaller basket of drugs as the official 10% margins was too small to keep pace with inflation. While inflation has been reduced, an inflation factor should be considered to maintain the real value of the RDFs.

Table 8.1. Policy Options for Key Pharmaceutical Pricing Variables (continued)

Policy	Policy Status Quo	Commentary
Procurement		
ICB purchases	Continue as is.	Evidence from the analysis indicates that procurement unit is obtaining drugs lower in cost than international prices quoted on the USAID RPM plus web site. This confirms the 1993 RPM findings. However, quality concerns were raised by several RMS and other purchasers; whether concerns are real or perceived, they have undermined the ability of the public to choose obtain and use cheaper EML drugs. May be scope to obtain lower prices without sacrificing quality or buying in bulk that is more appropriate to forecast needs.
CMS purchases of local products	Continue as is.	Evidence suggests that local suppliers are selling to the CMS at prices similar to those given to local SDPs and RMSs. With 15% mark-up on local purchases, the CMS price for these items are usually higher. While SDPs and RMS should be able to purchase directly from local suppliers, local suppliers do not want to see CMS leave the distribution system, as the CMS procures in bulk.
Public sector first policy	Maintain present policy but without monitoring, enforcement, or accountability.	Present policy is not being applied systematically across the country. Some RMSs try to follow it. At least half buy most of their drugs from the private sector, which may reflect rational procurement decisions being made at the local level based on drug availability, quality, and price. Analysis suggests that, except for a few items, the CMS is cheaper than the private sector.
RMS and SDP procurement performance management and monitoring	Maintain present approach of limited monitoring and no performance contracts or service agreements, and no accountability for irrational procurement.	Very limited management supervision by each level to the lower levels in the health commodity distribution system. Volta region is managing exemptions and not allowing its SDPs to procure on credit if they have outstanding balances owed to the RMS. This practice of actively managing procurement and financial performance appears to be the exception rather than the rule. Upper West also has several more complicated drug management systems in place. Appears to be no or little supervision from the CMS and MOH of RMS procurment performance.
Distribution		
CMS transportation	Do not provide transportation to the RMS.	CMS does not presently provide transportation services to the RMS but is planning to introduce the service. Some RMSs prefer to collect from the CMS as they have greater control over the quality, expiry dates, and damage and losses.
Contract out distribution of health commodities	Maintain present public sector transportation of health commodities.	The possibility of contracting the private sector to distribute between different levels exists but has not been systematically explored.
Financial Management		
Exemptions	Leave exemptions as presently defined: target population and condition.	Is concern that exemptions do not target the poor because they apply to all under-5s, over 70s, and antenatal care, TB and psychotropic drugs, and anti-snake serum and anti-rabies vaccine.
Exemptions reimbursement	Weak management at each level with long delays in transfer of reimbursements.	Exemption budgets are generally not defined; appears to be weak supervision and management of claims at the SDP and RHA level, reimbursement undermined by late reporting, inflated costs, and budget availability, leading to late and incomplete reimbursements that impact on decapitalizing RDF at each level. Seven billion cedis of debt are owed to the CMS by the RMS.

Table 8.1. Policy Options for Key Pharmaceutical Pricing Variables (continued)

Policy	Policy Status Quo	Commentary
Accountability		
Accountability for management decisions	No accountability to the GHS/MOH or the community for RHA/RMS/DHMT/ SDP decision making; no sanctions or rewards.	Weak accountability up the system, from the SDPs to the DHMT, to the RHA, and then the MOH/GHS. Stronger in some regions than others but managers usually not accountable for decisions at the local level. Virtually no accountability to community and community has limited voice in expressing concerns to health care providers and managers at different levels.

Other policy options, including the privatization or contracting out of CMS itself, is not covered in this paper as it was not a main area of investigation for the study. What should be remembered in any discussion of options for the CMS is that it plays a major public health role in ensuring essential emergency drugs can be supplied to regions affected by epidemics, such as the meningitis outbreak.

8.4 Defining Policy Options

Table 2 compares the existing policy situation, with up to three alternative options. Read the information in the table horizontally rather than vertically. For different policies, the status quo may be chosen but, for others, option A, B, or C may be chosen. As in table 8.1, the status quo is defined by present policy, as it is being applied in practice. In some cases, maintaining the status quo may be the best option in the short-term to medium-term. In other cases, consideration should be given to the suitability of adopting different options over time.

Table 8.2. Policy Options for Key Pharmaceutical Pricing Variables

Policy	Status Quo	Option A	Option B	Option C
Drug Selection				
National EML drug price list	Do not maintain a national drug price information list.	Create a national drug price list for information only based on a combination of international and local prices including those from ICB; update quarterly in discussion with the private sector.	Create drug price list and monitor purchasing decisions at each level with evaluation and audit of persistent outliers.	
Rational prescribing from the EML	Apply present policy without monitoring, enforcement, or accountability.	Link reimbursement of exemptions and payment of NHIF drug benefits to EML drugs only, based on agreed price list.		
Drug Margins				
Margins should…	Be subsidized by the government with the margin covering only the variable cost, excluding transportation.	Only recover costs associated with distribution to include transportation but exclude buildings and salaries.	Recover all costs: capital and operational costs of distribution including buildings, equipment, transportation, and salaries.	

Table 8.2. Policy Options for Key Pharmaceutical Pricing Variables (continued)

Policy	Status Quo	Option A	Option B	Option C
CMS margins	Stay the same.	Increase.	Decrease to reduce the cost to the health system.	
CMS Costs	No explicit cost controls, as financial management undermined by increasing debtors.	Establish a performance contract with CMS to identify ways to decrease costs while reducing debt situation from RMS.		
RMS and SDP margins	Do nothing, allow *de facto* decentralized margin setting to continue.	Set national standards. Allow local decision making within these standards.	Reinforce national policy but increase range of permissable margins.	Reinforce national policy; do not allow local variations or decision making.
Type of margins	Fixed percentage margins applied.	Variable margins, determined by local managers.	Fixed upper and lower limits, local management decides on levels between.	
Inflation adjustment	No inflation adjustment or analysis.	Incorporate drug inflation factor for margins adjusted annually.	Incorporate drug inflation factor for margins adjusted every six months.	
Procurement				
ICB purchases	Continue as is.	Discontinue.	Continue but with greater attention and management of quality control and consideration of no price factors in assessing bids.	
CMS Purchases of local products	Continue as is.	Continue with reduced margins.	Stop CMS involvement with the procurement unit agreeing on prices with local suppliers.	Stop CMS involvement and allow free market.
Public sector first policy	Maintain present policy but do not monitor, enforce, or be accountable.	Maintain present policy but enforce with accountability.	Allow free market decision making.	
RMS and SDP procurement performance monitoring	Maintain present approach of limited monitoring and no performance contracts or service agreements and no accountability for irrational procurement.	Establish local performance contracts and format for reporting; link to management incentives at each level.		
Distribution				
CMS transportation	Do not provide transportation to the RMS.	Provide transportation to RMS for an additional fee or margin.	Provide transportation services to RMS and fund within existing margins.	

Table 8.2. Policy Options for Key Pharmaceutical Pricing Variables (continued)

Policy	Status Quo	Option A	Option B	Option C
Contract out distribution of health commodities	Maintain present public sector transportation of health commodities.	CMS contract with a private transportation service for delivery to RMS.	RMS contract with local private transportation companies to pick up from CMS and deliver to SDPs.	
Financial Management				
Exemptions	Leave exemptions as presently defined, by target population and condition.	Reduce coverage of exemptions in line with budget availability. Establish a predetermined annual budget for exemptions to increase certainty; give local managers a certain figure to manage.	Review and redefine exemptions with greater poverty focus based on projected budget availability; link to revised regional resource allocation.	
Exemptions reimbursement	Do not address identified management weaknesses.	Stengthen exemptions planning, management, and monitoring at each level.		
Accountability				
Accountability for management decisions	No accountability to the GHS/MOH or to the community for RHA/RMS/DHMT/ SDP decision, making no sanctions or rewards.	Agree roles responsibility and performance targets with RHA and DHMT, introduce monitoring of this by MOH/GHS. Establish sanctions and rewards.	Also introduce accountability to the local community at both the district and regional levels.	

Note: GNDP is presently addressing issues of rational prescribing and rational drug use.

8.5 Recommended Options and Associated Action

We have presented our initial recommendations based on the analysis and discussion by team members. These recommendations need to be discussed with MOH/GHS experts to reflect their experience and understanding of what changes can be made. For each policy area, we identify the constraints likely to affect change, the actions needed to overcome these constraints, and the organizations responsible for making the changes proposed.

Table 8.3. Policy Recommendations and Associated Actions

Recommended Policy Change	Constraints	Action	Responsibility
Drug Selection			
National EML drug price list *Immediate:* Create a national drug price list for information only based on a combination of international and local prices including ICB; update quarterly with private sector. *Medium-term:* Create a drug price list and monitor purchasing decisions at each level with evaluation; audit persistent outliers.	Lack of systematic information on prices from local and international sources. Public purchasing decisions being made in an information vaccum.	Identify and maintain information from international sources including the BNF, USAID RPM plus, and WHO. Compile and update local suppliers information.	Procurement Unit and Drug Information Unit to establish drug price information. Technical support from GNDP. MOH to monitor procurement decisions.
Rational prescribing from the EML: link reimbursement of exemptions and payment of NHIF drug benefits to EML drugs only, based on agreed price list.	Irrational prescribing and consumer preferences leading to RMS spending their drug budgets on non-EML items.	Once NHIF is introduced, link reimbursement to EML items and prices, with consumers paying the difference between generic and branded price as a co-payment.	MOH, NHIF, GNDP
Drug Margins			
Margins should be subsidized by the government with margin covering only the variable cost, excluding transportation.	Loading full cost of distribution onto consumers would increase prices and reduce access.	Conduct further analysis of facility distribution costs to identify true cost of distribution and ways to reduce this.	MOH
CMS margins should be decreased to reduce the cost to the health system.	High margins are increasing the cost of drugs to the health system.	Link reductions in margins to cost savings from structural change at CMS.	CMS
CMS costs: Establish performance contract with CMS to identify ways to decrease costs while reducing debt situation from RMS. Payment of RMS arrears linked to CMS performance improvement against identified targets.	Accountability between CMS and MOH undermined by lack of clear performance indicators, targets, and monitoring mechanisms.	Define indicators and targets, develop a strategy for reducing costs, and a timetable for implementation with clear milestones. Confirm reporting to MOH.	MOH and CMS to agree on a performance contract.
RMS and SDP margins: *Immediate:* Reinforce national policy but increase range of permissable margins. *Medium-term:* Set national standards and allow local decision making within these standards.	Ability of RMS and SDPs to act in a commercial manner while balancing this with public interest of ensuring equitable access to drugs.	Strengthened financial management capacity at the RMS and SDP level. Stronger supervision and monitoring at RHA and MOH.	MOH to organize management and financial management training.
Type of margins: Fixed upper and lower limits with local management deciding on levels between. Variable margins, determined by local managers after capacity strengthened.	Ability of facilities to ensure proper financial management.	Strengthened financial management and setting of financial targets and controls.	MOH to organize management and financial management training.

Table 8.3. Policy Recommendations and Associated Actions (continued)

Recommended Policy Change	Constraints	Action	Responsibility
Inflation adjustment: Incorporate drug inflation factor in margins adjusted annually, moving to more frequent adjustments after capacity in place.	Lack of drug pricing capacity and information.	Link to establishment of a drug pricing capacity.	Procurement Unit
Procurement			
ICB purchases: Continue but with greater attention and management of quality control and consideration of no price factors in assessing bids.	Procurement units ability to forecast drug needs and assess quality in bids.	Strengthen drug forecasting and establish list of quality approved prequalified suppliers.	Procurement Unit
CMS Purchases of local products: Give SDPs and RMSs option to purchase direct from local sources with the procurement unit agreeing on prices with local suppliers.	SDPs and RMS do not have drug information. Increased procurement costs and decreased economies of scale.	Strengthen local procurement decision making. Identify ways to keep CMS involved through better quality management.	CMS and MOH
Public sector first policy: Adjust present policy to allow local decision making but make local managers accountable and ensure better monitoring of performance targets.	RHA and RMS presently not accountable for how they spend funds; management decisions not linked to performance targets.	Define performance targets. Strengthen monitoring and audit capacity.	MOH, GHS, RHA
RMS and SDP procurement performance monitoring: Establish local performance contracts and format for reporting; link to management incentives at each level.	No link between management decision making and consequence of actions.	Define performance targets. Strengthen monitoring and audit capacity.	MOH, GHS, RHA
Distribution			
CMS transportation: Provide transportation services to RMS and fund within existing margins. CMS review scope for contracting with a private transportation service for delivery to RMS.	Ability of CMS to manage delivery of drugs within existing overhead costs.	Initiate services from CMS and RMS; then examine scope for contracting services out.	CMS, RMS
Financial Management			
Exemptions: Review and redefine exemptions with greater poverty focus based on projected budget availability; link to revised regional resource allocation. Establish a predetermined annual budget for exemptions to increase certainty and give local managers a definite figure to manage.	Political will to change entitlements despite obvious budget constraints.	Use NHIF as an opportunity to change exemption entitlements and set budgets.	MOH/GHS/NHIF MOF Parliament
Exemption reimbursement: Stengthen exemptions planning, management, and monitoring at each level.	Management capacity at RHA to manage exemptions more effectively.	Document, disseminate, and train regions in the Volta Region model.	GHS/MOH/Volta Region RHA

Table 8.3. Policy Recommendations and Associated Actions (continued)

Recommended Policy Change	Constraints	Action	Responsibility
Accountability			
Agreeing on an accountability framework: The MOH/GHS need to agree on a reasonable accountability framework that balances the need to ensure consistent application of national pricing policy with local community needs and decentralized regional and district decision making.	Lack of accountability for local decision making.	Workshop to agree on accountability framework. Identify ways to involve local communities in reviewing health management performance.	MOH/GHS with Regional Directors

For ease of presentation, we consolidate and repeat the main actions required in the short- and medium-term under the broad headings of—

- CMS management costs and margins
- RMS and SDP margins
- ICB procurement and product quality
- MOH/GHS cash flow and budgeting
- accountability.

8.5.1. Central Medical Stores Management Costs and Margins

Short-term (next six months):

- MOH/GHS should define and agree on a set of performance improvement targets with the new management committee for the CMS, including financial targets for gross and net margins and reduction of operating costs.
- Average gross margins should be reduced to less than 20 percent with margins on offshore supplies purchases through ICB falling below 20 percent and those on local purchases below 5 percent.
- Modalities, under which the CMS is allowed to supply to the private sector, should be outlined and defined clearly. These could include the option to charge higher margins. However, sales to the private sector should not put availability of EML items to the public sector at risk.

Medium-term (two years):

- The management committee will need to design and implement a plan to reduce its cost structure and improve the efficiency of its operations. Among others, the CMS need to make improvements in the customer focus of the CMS.
- Estimate the cost of subsidy for anti-snake serum and anti-rabies vaccine and obtain payment from MOH/GHS.
- MOH/GHS will need to evaluate performance and define appropriate sanctions or rewards for the agreed-upon performance targets.

8.5.2 RMS and SDP Margins

Short-term:

- RMS and SDP margins should be officially increased from 10 percent, initially to 15 percent. The MOH/GHS should actively monitor drug prices to ensure compliance with official policy.

Medium-term:

- RDF needs to review and recapitalize in line with planned drug budgets. To reduce the cascading debt situation that has contributed to decapitalization, transactions should move to a cash rather than credit basis between RMS and SDPs and RMS and CMS. Improved management and greater certainty of exemptions (see below) should reduce payment delays and reduce the need for large inflation adjustments.

8.5.3 ICB Procurements and Product Quality

Short-term:

- The MOH/GHS should take steps to consolidate the relatively better prices achieved through ICB procurements and improve the quality or perception of quality of its products.

- GNDP should be institutionalized within the MOH/GHS and agree on a clear commitment and budget for its work on rational drug use and drug education.

Medium-term:

- It is clear that the inability to accurately forecast annual requirements and plan the procurement of these through ICB undermines the gains of lower prices through top-up procurement.

- Efforts should be made to improve the forecasting of requirements to ensure that local top-up procurements are reduced, if not completely eliminated.

- The perception of lower quality, though unproven, undermines the credibility of the CMS and its lower level clients. The quality assurance systems of the procurement process needs to be enforced and publicized to its clients.

8.5.4 MOH/GHS Cash Flow and Budgeting

Short-term:

- Immediate steps should be taken to improve financial management at all levels of the supply chain. The current management of credit facilities extended to each lower level within that system and the huge balances of outstanding accounts receivables has affected the ability of the stores and supplies system to meet its mandate effectively and efficiently. An immediate evaluation and assessment of the debt aging structure will help formulate a clear policy on credit sales for each level.

Medium-term:

- Analyze and document the financial sustainability of each level of the supply system, and determine the need for recapitalization, if any. Determine the need to reallocate funds within the system from levels or facilities with huge idle cash balances to the financially distressed facilities.
- Develop and implement a template for reporting financial performance at all levels of the supply system for monitoring and evaluation, as well as supervision.
- Document, disseminate, and organize training for RHA in the Volta management model.
- Agree on exemption budgets and define operational guidelines for implementing exemption policy.
- Improve the budgeting of planned activities and obtain the needed resources or budgets to ensure the integrity of commodity supply funds at each level.

8.5.5 Accountability

Short-term:

- The MOH/GHS should discuss and agree with the regional directors of health on the right balance between decentralized decision making and establishing accountability for decision making and responsibility for outcomes. Given initial negative feelings expressed at the Health Summit, a workshop event will be needed to build concensus and find a way to balance different view points.
- The output of the workshop should be agreed-upon and defined roles and responsibilities, levels of accountability sanctions, and rewards for each level of the health system.

Medium-term:

- Regional and district health managers would need to report to the central and regional authorities, respectively. Accountability would also need to be defined at both the regional and district level to local community groups.

Appendix 1

Qualitative and Quantitative Questionnaires

Qualitative and Quantitative Questionnaires

QUALITATIVE SURVEY TOOL

Interviewee(S) Name and Title: _____

Facility Name_____ **Date_____**

Location/Region _____ **Type Public//NGO/Private**

#	Questions			Comments
Section 1: Purchasing				
1.	A. What are the sources of your supply? B. Approximate share (public/private)?			
2.	What share of your purchased products are: A. Generic: B. Brand:			
3.	What factors are considered in decisions to obtain re-supply from the private sector vs. the public sector? A. Price: B. Quality: C. Availability: D. Delivery E. Credit: F. Ease of ordering:	Public	Private	
4.	What are the factors involved in stockouts and undersupply of drugs on the product list? A. Price: B. Availability: C. Demand: D. Decapitalization:			

#	Questions	Comments
5.	How frequently are orders fulfilled when purchasing drugs from : A. Private sector? B. Public sector?	
Section 2: Sales		
6.	Is this facility aware of the official MOH mark-up policy (on pharmaceuticals)? A. What is it?	
7.	What price markups are applied? What does this cover? A. Why B. How: C. By Whom:	
8.	Do current mark-ups provide coverage for A. Devaluation/inflation: B. Program expansion: C. Transport: D. Other:	
9.	What are the sources of revenue for the RDF? A. Drug/supply sales: B. Exemption income/Reimbursements C. Budget support D. Other sources:	
10.	Does ability/willingness to pay (on the part of clients) factor into provider attitudes regarding the number of drugs prescribed to patients who must pay for the pharmaceuticals, e.g., do providers attempt to prescribe: A. Only the essential (minimum) low-income clients? B. (maximum) to upper income clients?	

#	Questions	Comments
Section 3: Exemptions		
11.	What are the criteria for exemptions? A. Drugs: B. Clients: C. Diseases:	
12.	Do this facility receive reimbursements for free (exempt) drugs?	
13.	What is the proportion (percentage) of exemptions made at this facility during the last calendar year (2002)? (Total of all exempt categories (drugs, people, and diseases)?	
14.	Are exemptions made to clients who do not meet the standard criteria?	
15.	What proportion (percentage) of exemption refunds due to the SDP are actually received?	
16.	Does difficulty in obtaining exemption refunds (if applicable) affect the percentage mark-up on any/all of the product list?	
17.	How long does it take for the SDP to receive an exemption reimbursement?	

#	Questions	Comments
Section 4: Financial Management		
18.	Are there any surplus funds? How are surplus funds used?	
19.	Does this facility receive sufficient funding/resources, from either reimbursements or budget support, to prevent decapitalization?	
20.	How does the facility manage decapitalization?	
21.	What are some factors that can increase (the following) in the MOH pharmaceutical distribution system? A. Equity: B. Sustainability: C. Efficiency:	

QUANTITATIVE SURVEY TOOL

Facility: _____ **Date:** _____

Location: _____ **Ownership:** Public ☐ Private ☐ NGO ☐

Contact Details: _____

Invoice date	Product description	Dosage	Size	Package Type	Unit	Unit Price	Quantity	Total Value	Source
	Aluminium hydroxide	500 mg	500 mg	Tablet	1000				
	Aluminium hydroxide	500 mg	500 mg	Tablet	500				
	Aluminium hydroxide	500 mg	500 mg	Tablet	1				
	Amoxycillin Suspension	125 mg/5 ml	100 ml	Bottle	1				
	Amoxycillin Suspension	125 mg/5 ml	60 ml	Bottle	1				
	Anti snake bite serum	10 ml	10 ml	Vial	1				
	Benzyl Penicillin	600 mg (1mu)	600 mg	Vial	1				
	Chloramphenicol	250 mg	250 mg	Capsule	1000				
	Chloroquin Base	150 mg	150 mg	Tablet	1				
	Chloroquine	40 mg/ml	5 ml	Vial	1				
	Chloroquine Base	150 mg	150 mg	Tablet	1000				
	chloroquine base	80 mg/ml	80 mg/ml	Bottle	1000				
	Chloroquine base	80 mg/ml	80 mg/ml	Bottle	100b				
	Condom (male)	1	1	Condoms	1				
	Condom (male)	1	1	Condoms	100				
	Co-trimoxazole	240 mg	100 ml	Bottle	1				
	Co-Trimoxazole	240 mg	60 ml	Bottle	1				
	Dextrose 5%	500 ml	500 ml	Vial	1				
	Diazepam	5 mg/ml	2 ml	Ampoule	1				
	Diazepam	5 mg/ml`	2 ml	Ampoule	100				
	Ergometrine Maleate	500 mcg/ml	1 ml	Ampoule	1				
	Gentamicin	40 mg/ml	2 ml	Vial	1				

Invoice date	Product description	Dosage	Size	Package Type	Unit	Unit Price	Quantity	Total Value	Source
	Hydrocortisone Sod. Succinate	50 mg/ml	2 ml	Vial	1				
	Ibuprofen	200 mg	200 mg	Tablet	1000				
	Ibuprofen	200 mg	200 mg	Tablet	1				
	Injectable (Depo-Provera)			Vial	1				
	Low dosage pill	cycle	cycle	Cycle	1				
	Mebendazole	100 mg	100 mg	Tablet	1				
	Mebendazole	100 mg	100 mg	Tablet	1000				
	Methyldopa	250 mg	250 mg	Tablet	1				
	Methyldopa	250 mg	250 mg	Tablet	1000				
	Multivitamine	BP	BP	Tablet	1000				
	Multivitamine	BP	BP	Ampoule	1				
	Nifedipine	20 mg	20 mg	Tablet	30				
	ORS	sachet	sachet	Sachet	1				
	Oxytocin	5 iu/ml	1 ml	Ampoule	1				
	Paracetamol	500 mg	500 mg	Tablet	1000				
	Paracetamol	500 mg	500 mg	Tablet	1				
	Paracetamol Syrup	120 mg/5ml	60 ml	Bottle	1				
	Paracetamol Syrup	120 mg/5ml	1000 ml	Bottle	1				
	Procaine Penicillin	4 mu	4 mu	Vial	1				
	Thiopentone Sodium	1 gr	1 gr	Vial	1				
	Water for injection	5 ml	5 ml	Vial	1				

SDP & PHARMACY PRICING SURVEY TOOL

Facility Name: _____ **Date:** _____

Location: _____ **Ownership:** Public ☐
Private ☐
Contact Details: _____ NGO ☐

******Also Get Copy of Price Lists Used in 2002.*****

Product No.	Product description	Strength	Dosage Form	Package Type	Unit	Unit Price
	Aluminium hydroxide	500 mg	500 mg	Tablet	1000	
	Aluminium hydroxide	500 mg	500 mg	Tablet	500	
	Aluminium hydroxide	500 mg	500 mg	Tablet	1	
	Amoxycillin Suspension	125 mg/5ml	100 ml	Bottle	1	
	Amoxycillin Suspension	125 mg/5ml	60 ml	Bottle	1	
	Anti snake bite serum	10 ml	10 ml	Vial	1	
	Benzyl Penicillin	600 mg(1mu)	600 mg	Vial	1	
	Chloramphenicol	250 mg	250 mg	Capsule	1000	
	Chloroquin Base	150 mg	150 mg	Tablet	1	
	Chloroquine	40 mg/ml	5 ml	Vial	1	
	Chloroquine Base	150 mg	150 mg	Tablet	1000	
	chloroquine base	80 mg/ml	80 mg/ml	Bottle	1000	
	Chloroquine base	80 mg/ml	80 mg/ml	Bottle	100b	
	Condom (male)	1	1	Condoms	1	
	condom (male)	1	1	Condoms	100	
	Co-trimoxazole	240 mg	100 ml	Bottle	1	
	Co-Trimoxazole	240 mg	60 ml	Bottle	1	
	Dextrose 5%	500 ml	500 ml	Vial	1	
	Diazepam	5 mg/ml	2 ml	Ampoule	1	
	Diazepam	5 mg/ml`	2 ml	Ampoule	100	
	Ergometrine Maleate	500 mcg/ml	1 ml	Ampoule	1	
	Gentamicin	40 mg/ml	2 ml	Vial	1	
	Hydrocortisone Sodium Succinate	50 mg/ml	2 ml	Vial	1	
	Ibuprofen	200 mg	200 mg	Tablet	1000	
	Ibuprofen	200 mg	200 mg	Tablet	1	
	Injectable (depo provera)			Vial	1	
	Low dosage pill	cycle	cycle	Cycle	1	
	Mebendazole	100 mg	100 mg	Tablet	1	
	Mebendazole	100 mg	100 mg	Tablet	1000	
	Methyldopa	250 mg	250 mg	Tablet	1	
	Methyldopa	250 mg	250 mg	Tablet	1000	
	Multivitamine	BP	BP	Tablet	1000	
	Multivitamine	BP	BP	Ampoule	1	
	Nifedipine	20 mg	20 mg	Tablet	30	

Product No.	Product description	Strength	Dosage Form	Package Type	Unit	Unit Price
	ORS	sachet	sachet	Sachet	1	
	Oxytocin	5 iu/ml	1 ml	Ampoule	1	
	Paracetamol	500 mg	500 mg	Tablet	1000	
	Paracetamol	500 mg	500 mg	Tablet	1	
	Paracetamol Syrup	120 mg/5 ml	60 ml	Bottle	1	
	Paracetamol Syrup	120 mg/5 ml	1000 ml	Bottle	1	
	Procaine Penicillin	4 mu	4 mu	Vial	1	
	Thiopentone Sodium	1 gr	1 gr	Vial	1	
	Water for injection	5 ml	5 ml	Vial	1	

COST TOOL

Facility: _____ **Date:** _____

Location: _____ **Ownership:** Public ☐ Private ☐ NGO ☐

Contact(s) Details: _____

WAREHOUSING

1. Overall

Expenses related to warehouses (storage + handling):

Cost Type	2002 Costs (12 months)	Comments (e.g., source of funds, estimation approach used)
Salaries and Allowances (not including other than drivers)[5]		
Rents[6]		
Rates or other property taxes[6]		
Property repairs[7]		
Power and Light[8]		
Telephone and Fax [8]		
Insurance[9]		
Equipment Depreciation[10]		
Equipment Servicing and repair [7]		

NOTES:

[5] Salaries of storekeepers, packers, and store maintenance personnel. Possible estimation is to obtain: # of people employed in warehouse x Average personnel salary or salary range (also see question 2 under Warehousing section)

[6] May or may not be applicable. Make note if this is covered by Central MOH. Estate Officer may be appropriate officer to interview

[7] Estimation approach: ask description of typical quarterly repairs completed, and then ask for estimation of cost of doing repairs

[8] Estimation approach: obtain range of average monthly or quarterly bills for this items incurred/paid for by facility

[9] Includes insurance specific to warehouse and its operations (e.g., theft, flood, etc.). Estimation approaches:
1) obtain annual premium paid for relevant insurance policies, or
2) get average quarterly fee paid for insurance.

[10] Equipment related to picking and packing and general inventory control/management in the warehouses. Possible estimation approach:
- Get list of equipment types used in the warehouse (use separate form as appropriate),
- Get estimate of purchase value of the equipment (or use approx. purchase value of the equipment in 2002)
- Ask for the depreciation schedule the facility uses to record for depreciation for equipment

Fuel[11]		
Other; please specify: _____		
Other; please specify: _____		

2. Information to estimate indicators

a. # of laborers (non technical, non-management staff): _____

b. Average days per week worked by personnel (give range if appropriate): _____

c. # of warehouse facilities: _____

d. Average volume per warehouse[12]: _____

[11] Includes only fuel for generators and cold chain. To estimate, ask for average or range for monthly of quarterly fuel costs.

[12] Perform practical walk through the facility and get estimate of cubic meters.

TRANSPORTATION

Expected that majority of data will be used from Transportation Cost Study. Where available, calculate the actual transportation capacity and activity using this tool.

1. Current Vehicle Resources:

Please list below the delivery resources available to you:

Type of Vehicle	Number	Average age	Est. purchase price	Condition (good, fair)

2. Use of Vehicle Resources:

Please provide the average total kilometers operated for each vehicle type listed above:

Type of Vehicle	No of Days per month	Average Kms per month

If data is difficult to obtain then please provide the following:

a. Average distance to an SDP

b. Average time to an SDP

c. # of SDPs in coverage area

d. Average frequency of delivery to SDP per year

e. Average number of days the vehicle is off the road for maintenance purposes (e.g., per month projected per year)

3. Direct Costs of Deliveries

The table below lists various direct costs of operating a delivery service. Please indicate the actual costs that you have incurred over the last 6 months in each category. Indicate the funding for each category.

Cost Type	2002 Costs (12 months)	Comments (e.g., source of funds, estimation approach used)
Drivers salaries and allowances		
Vehicle depreciation or vehicle lease costs		
Vehicle hire or pool charges		
Vehicle licenses, test fees, etc.		
Vehicle Insurance		
Fuel		
Vehicle maintenance		
Tires		
Accident damage repairs		
Transport contractor charges		
Other please specify		
Other please specify		

OPERATING AND GENERAL ADMINISTRATIVE COSTS

If time is a constraint, both operating and general administrative costs will be estimated using more general approaches. The following is a guide for components of overhead costs that should be included.

4. Manpower

Please list below the manpower resources available to you.

Category	Number	Salary (Range)
Operating Administrative		
Inventory Control/Auditing		
Technical Staff		
Warehouse Management		
Other: _____		
General Administrative		
Managers		
Finance		
Administration		
Other: _____		

5. Related costs

Operating administrative cost related:

Cost Type	Last 6 Month's Costs	Source of Funds
Salaries and allowances (other than drivers)		
Rents		
Rates or other property taxes		
Property repairs		
Power and light		
Telephone and fax		
Insurance		
Vehicle/equipmen depreciation		
Vehicle/equipment servicing and repair		
Fuel		
Other please specify		
Other please specify		

COSTS - OTHER

1. Total budget received, broken down by cost category

    a. Source and amount of funding for RDF for 12 months
    b. Revenue from Mark-up (sales minus COGS)
    c. Profit and loss for RDF
    d. Total value of products received (purchased or donated), cedis:

    _____

    e. Total value of products sold:

    _____

2. Financing related costs (debt management, interest payments, other instruments)

Credit Line:

    a. Do you receive credit for drug purchases?
    b. Do you pay interest on credit?
    c. How long does is take to pay off credit line?

Loan and/or debt payment

    d. Do you take out loans for drug purchases?
    e. Do you pay interest on loans?
    f. How long does is take to pay off credit line?

Do you have other finance arrangements for procuring drugs and paying debts?

2. Cedi fluctuation adjustments

3. Stock difference adjustments: how significant is this adjustment?

    - Percentage of devaluation or appreciation of stock last year
    - Amount in cedis
    - How is this adjustment dealt with ?

4. Adjustments for cost of damage and losses
5. Replacement cost targets
    - Do you budget for procurement of drugs (including cost of drugs)?
    - What is included in the budget?
6. Exemptions
    - What is the value of exemptions?
    - How are anti-snake and anti rabies drugs dealt with? Other “free” drugs (e.g., TB, psychotropic)?
    - What has been the average rate and frequency of reimbursement?

Appendix 2

List of Facilities Visited

Appendix 2

List of Facilities Visited

Region	Facility Code	Type	Name
Ashanti Region	Wholesalers	Private	Ernest Chemists, Kumasi
	Teaching Hospital	Public	Teaching Hospital, Kumasi
	SDP	Public	Mampong District Hospital, Mampong
	SDP	Public	Abuakwa Health Centre
	SDP	Private	University Hospital, Kumasi
	SDP	Public	Aboaso Health Centre
	SDP	Public	Suntreso Hospital
	RMS	Public	RMS Ashanti
	Pharmacy	Private	Rosecare Chemists, Asokwa
	Pharmacy	Private	Ray Pharmacy
	Pharmacy	Private	Mensaf Chemist
Brong Ahafo Region	SDP	Public	Nsoatre Health Centre
	SDP	Public	Abesim Rural Clinic
	SDP	Public	Regional Hospita, Sunyani
	SDP	Public	Family Planning Centre, Sunyani
	SDP	Private	Green Hill Clinic
	SDP	Public	Wenchi Methodist Hospital
	SDP	Public	Subinso Health Centre
	RMS	Public	RMS Brong Ahafo
	Pharmacy	Private	Greenlight Pharmacy
	Pharmacy	Private	Donatus Pharmacy
Central Region	SDP	Public	Cape Coast Regional Hospital
	SDP	Public	Adisadel Urban Health Centre
	SDP	Public	Moree Health Centre
	RMS	Public	RMS Central
	RMS	Public	Regional Health Administration
Eastern Region	SDP	Public	Koforidua Regional Hospital
	SDP	Public	Oda District Hospital
	SDP	Public	Akroso Health Centre
	SDP	Public	Achiase Health Centre
	RMS	Public	RMS Eastern
	RMS	Public	Regional Health Administration
Greater Accra Region	Wholesalers	Private	Unicom Pharmacy
	Teaching Hospital	Public	Korle-Bu Hospital
	SDP	Public	Ussher Polyclinic
	SDP	Public	Mamprobi Polyclinic
	SDP	Public	Communicable Diseases Hospital

Region	Facility Code	Type	Name
	RMS	Public	RMS Greater Accra
	Pharmacy	Private	Monaz
	Pharmacy	Private	Rabonni
	Manufacturers	Private	M & G Pharmaceuticals
	GSFM	Private	Ghana Social Marketing Foundation
	CMS	Public	Central Medical Stores, Tema
	RMS	Public	Regional Health Administration
Northern Region	SDP	Public	Savelugu Health Centre
	SDP	Public	Yendi District Hospital
	SDP	Public	Tamale West Hospital
	SDP	Public	Tamale Regional Hospital
	SDP	Public	Jirapa Hospital
	SDP	Public	Lawra Hospital
	SDP	Public	Diare Health Centre
	RMS	Public	RMS Northern
	SDP	Private	Country Surgery Clinic
	Pharmacy	Private	Ricky Pharmacy
	Pharmacy	Private	Chamalt Pharmacy
	RMS	Public	Regional Health Administration
Upper East Region	SDP	Public	War Memorial District Hospital
	SDP	Public	Bolgatanga Regional Hospital
	SDP	Public	Zuarungu Health Centre
	SDP	Public	Pwalugu Health Centre
	SDP	Private	Rural Help Medical Centre
	RMS	Public	RMS Upper East
	Pharmacy	Private	Valdi Pharmacy
Upper West Region	SDP	Public	Wa Regional Hospital
	SDP	Public	Charia Health Centre
	SDP	Public	Domwini Health Centre
	RMS	Public	RMS Upper West
	Pharmacy	Private	Greenbeam Chemists
	Pharmacy	Private	Yaasin Pharmaceuticals
Volta Region	RMS	Public	RMS Volta
	RMS	Public	Regional Health Administration
Western Region	RMS	Public	RMS Western
	RMS	Public	Regional Health Administration

Appendix 3

Data Tables

Appendix 3

Data Tables

Figure 4.1. Average RMS price differences for the 35 tracer drugs across all regions (reference for **Table 4.6** Public private price differences for 10 of the tracer drugs purchased by the RMS predominantly from the private sector)

		Overall Average		Private-Public
	Combined Description	**Private**	**Public**	**Difference**
1	Aluminium Hydroxide 500 mg, 500 mg, 1	15.6	9.7	62%
2	Aluminium Hydroxide 500 mg, 500 mg, 500	9,090.0		
3	Amoxycillin Suspension 125 mg/5 ml, 100 ml, 1	3,346.0	1,507.4	122%
4	Amoxycillin Suspension 125 mg/5 ml, 60 ml, 1		1,584.0	
5	Anti Snake Bite Serum 100 ml, 10 ml, 1		15,000.0	
6	Benzyl Penicillin 600 mg (1 MU), 600 mg, 1	1,071.7	1,282.1	-16%
7	Chloramphenicol 250 mg, 250 mg, 1000	74,903.0	66,423.8	13%
8	Chloroquine Base 150 mg, 150 mg, 1	36.2	34.5	5%
9	Chloroquine Base 150 mg, 150 mg, 1000	48,000.0		
10	Chloroquine Base 80 mg/ml, 80 mg/ml, 1000	11,120.6	6,037.4	84%
11	Chloroquine 40 mg/ml, 5 ml, 1	585.1	492.5	19%
12	Co-trimoxazole 240 mg, 100 ml, 1	2,712.5	1,345.8	102%
13	Co-trimoxazole 240 mg, 60 ml, 1		1,264.6	
14	Dextrose 5% 500 ml, 500 ml, 1	7,198.4	7,473.1	
15	Diazepam 5 mg/ml, 2 ml, 1	1,230.6	914.3	35%
16	Ergometrine Maleate 500 mcg/ml, 2ML, 1	1,540.9	1,638.2	-6%
17	Gentamicin 40 mg/ml, 2 ml, 1	682.8	759.4	-10%
18	Hydrocortisone Sodium Succinate 50 mg/ml, 2 ml, 1	4,150.0	3,605.8	15%
19	Ibuprofen 200 mg, 200 mg, 1		20.8	
20	Ibuprofen 200 mg, 200 mg, 1000		20,925.0	
21	Mebendazole 100 mg, 100 mg, 1	38.7	53.6	-28%
22	Mebendazole 100 mg, 100 mg, 1000	24,000.0	49,805.0	-52%
23	Methyldopa 250 mg, 250 mg, 1	497.5	381.2	31%
24	Multivitamin BP, BP, 1	9.8	6.5	50%
25	Multivitamin BP, BP, 1000	9,500.0	5,600.0	70%
26	Nifedipine 20 mg, 20 mg, 30	5,523.3	3,792.6	46%
27	ORS Sachet, Sachet, 1	667.0	428.3	56%
28	Oxytocin 5 IU/ml, 1 ml, 1	1,170.0	940.1	24%
29	Paracetamol Syrup 120 mg/5 ml, 1000, 1	8,766.7	8,200.0	7%
30	Paracetamol Syrup 120 mg/5 ml, 60 ml, 1		2,400.0	
31	Paracetamol 500 mg, 500 mg, 1	18.9	14.6	29%
32	Paracetamol 500 mg, 500 mg, 1000	15,808.3	12,737.5	24%
33	Procaine Penicillin 4 Mu, 4 Mu, 1		2,237.2	
34	Thiopentone Sodium 1 g, 1 g, 1	12,000.0	7,411.9	62%
35	Water for Injection 5 ml, 5 ml, 1	350.0	254.8	37%

Figure 4.2. Comparative Prices Across Regions By Level Of Distribution

	Ashanti Region	Brong Ahafo Region	Central Region	Eastern Region	Greater Accra Region	Upper East Region	Upper West Region	Volta Region	Western Region	Northern Region
Aluminium Hydroxide 500 mg, 500 mg, 1										
CMS	-	-	15	10	15	5	5	-	15	5
RMS	15	19	-	-	-	19	5	-	26	-
SDP	25	30	23	20	40	20	14	0	-	26
Amoxycillin Suspension 125 mg/5 ml, 100 ml, 1										
CMS	1,584	1,584	1,423	1,256	1,584	1,584	1,584	1,584	1,383	1,584
RMS	3,083	-	-	-	-	3,350	1,889	-	2,075	3,163
SDP	4,083	3,793	3,867	3,500	6,000	3,925	2,891	0	-	4,800
Anti Snake Bite Serum 100 ml, 10 ml, 1										
CMS	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000
RMS	16,500	15,000	-	-	-	-	16,500	-	16,000	20,000
SDP	11,550	17,383	-	-	20,000	-	18,975	0	-	16,995
Benzyl Penicillin 600 mg (1MU), 600 mg, 1										
CMS	1,065	-	1,035	997	1,198	2,283	901	-	1,424	1,137
RMS	1,364	1,348	-	-	-	1,500	1,103	-	1,050	1,576
SDP	1,717	1,538	1,567	1,633	2,000	1,750	1,017	0	-	1,733
Chloramphenicol 250 mg, 250 mg, 1000										
CMS	-	61,300	74,150	58,617	74,150	-	74,150	-	61,300	61,300
RMS	-	74,000	-	-	-	-	80,000	80,525	-	81,500
SDP	96,667	105,000	150,000	110,000	225,000	92,000	84,160	0	-	89,286
Chloroquine Base 150 mg, 150 mg, 1										
CMS	41	34	34	35	32	-	35	36	35	36
RMS	48	46	-	-	-	50	42	-	45	54
SDP	58	61	80	70	75	61	55	0	-	62
Chloroquine Base 80 mg/ml, 80 mg/ml, 1000										
CMS	6,038	6,038	6,038	6,038	6,038	6,038	6,038	6,037	6,038	6,038
RMS	7,000				6,900	6,780			14,950	
SDP	13,500	13,260	15,333	19,667	20,000	11,300	10,003			19,325
Co-trimoxazole 240 mg, 100 ml, 1										
CMS		1,368	1,368	1,213		1,368	1,368	1,368		1,368
RMS	2,700					2,300	1,703			3,148
SDP	3,653	3,060	4,100	3,667	6,000	3,075	1,586			4,087
Dextrose 5% 500 ml, 500 ml, 1										
CMS		6,555		7,836	7,580		7,196		7,836	7,836
RMS	8,600	8,620				8,100	7,961		8,200	9,012
SDP	10,740	9,988	9,167	9,125	10,500	8,975	8,089			10,179
Diazepam 5 mg/ml, 2 ml, 1										
CMS		992	920	587	1,044		920			1,024
RMS	2,165	1,000				1,100	1,233		1,900	1,178
SDP	1,225	1,403	1,100	1,375	1,750	900	1,383			1,513
Gentamicin 40 mg/ml, 2 ml, 1										
CMS		788	788	920	722	656	788			656
RMS	950	883				1,058	870		900	1,058
SDP	1,124	1,300	1,000	1,150	1,750	1,250	2,174			1,190

	Ashanti Region	Brong Ahafo Region	Central Region	Eastern Region	Greater Accra Region	Upper East Region	Upper West Region	Volta Region	Western Region	Northern Region
Ibuprofen 200 mg, 200 mg, 1										
CMS			20	20		21	21	21	20	21
RMS	30	23				30	24		38	25
SDP	38	57	38	45	100	42	37			42
Mebendazole 100 mg, 100 mg, 1										
CMS	77		77	77	77	23	50		50	23
RMS	151	35				50	84		58	35
SDP	69	96	92	110	320	100	51			54
Methyldopa 250 mg, 250 mg, 1										
CMS	450	370	370	450	290		450		290	450
RMS	500	698					509	610		456
SDP	500	813	800	550		227	666			644
Multivitamin BP, BP, 1										
CMS	6	6	6	7	6	9	7	6	6	7
RMS	9	8				9	14	10	10	8
SDP	11	17	20	14	27	14	10			22
ORS Sachet, Sachet, 1										
CMS	429	429	427	429	429	429	429	429	428	429
RMS	574	475				600	476	501	585	493
SDP	651	801	750	725	750	640	568			746
Paracetamol Syrup 120 mg/5 ml, 1000, 1										
CMS	8,200	8,200	8,200	8,200	8,200	8,200	8,200			8,200
RMS	1,900	8,763				7,860	7,969	8,910	9,200	9,890
SDP	2,150	11,973	17,467	17,000	20,000	11,200	11,699			16,343
Paracetamol 500mg, 500mg, 1										
CMS	14	14	14	15	14	15	15		15	15
RMS	17	18				15		16	17	17
SDP	46	26	30	23	25	21	22			32
Procaine Penicillin 4 Mu, 4 Mu, 1										
CMS	2,243	2,231	2,237	2,240	2,237		2,237	2,243	2,237	
RMS	2,590	2,953				1,900	2,665	2,625		2,246
SDP	2,881	3,219	4,000	3,350		2,638	2,763			3,100
Thiopentone Sodium1 g, 1 g, 1										
CMS	8,625		8,625	7,982		5,220	8,625	6,520	7,500	
RMS	8,500	9,540				4,987	10,078	9,487		6,125
SDP	15,000	12,500	12,600	12,500		4,400				16,100
Water for Injection 5 ml, 5 ml, 1										
CMS	65	176	127	288	127		65	450	288	518
RMS	198	495					72	72		150
SDP	294	440	150	150	200	500	200			230

Table 4.3. Proportion of the Tracer Drugs Purchased by the RMS from either the Public or Private sector or both "1" indicates at least one purchase "episode" was recorded for the given drug.
(reference for **Table 4.5.** List of Tracer Drugs where majority of regions purchased predominantly from the Private Sector [% purchased all or partially from private sector]**)**

		Grand Total			Ashanti Region			Brong Ahafo Region			Central Region			Eastern Region			Greater Accra Region		
	Combined Description	Only Private	Only Public	Both	Only Private	Only Public	Both	Only Private	Only Public	Both	Only Private	Only Public	Both	Only Private	Only Public	Both	Only Private	Only Public	Both
1	Aluminium Hydroxide 500 mg, 500 mg, 1	2	5	2				1				1			1				1
2	Aluminium Hydroxide 500 mg, 500mg, 500	1	1					1											
3	Amoxycillin Suspension 125 mg/5 ml, 100 ml, 1		4	5					1				1		1				1
4	Amoxycillin Suspension 125 mg/5 ml, 60 ml, 1		2															1	
5	Anti Snake Bite Serum 100 ml, 10 ml, 1		7						1			1			1			1	
6	Benzyl Penicillin 600 mg (1 MU), 600mg, 1	1	5	2								1			1			1	
7	Chloramphenicol 250 mg, 250 mg, 1000	3	3	4	1					1		1				1		1	
8	Chloroquine Base 150 mg, 150 mg, 1	1	7	1					1			1			1			1	
9	Chloroquine Base 150 mg, 150 mg, 1000	1	1								1								
10	Chloroquine Base 80 mg/ml, 80 mg/ml, 1000		4	5					1				1			1		1	
11	Chloroquine 40 mg/ml, 5 ml, 1	2	3	4				1					1			1		1	
12	Co-trimoxazole 240 mg, 100 ml, 1	1	1	6						1			1		1				
13	Co-trimoxazole 240 mg, 60 ml, 1		3																
14	Dextrose 5% 500 ml, 500 ml, 1	2	2	4						1	1					1		1	
15	Diazepam 5mg/ml, 2 ml, 1	3	1	5						1			1			1		1	
16	Ergometrine Maleate 500 mcg/ml, 2 ML, 1	2	1	4									1		1				
17	Gentamicin 40 mg/ml, 2 ml, 1	2	5	2					1			1				1		1	
18	Hydrocortisone Sodium Succinate 50 mg/ml, 2 ml, 1	1	1	2									1						
19	Ibuprofen 200 mg, 200 mg, 1		6	1								1			1				
20	Ibuprofen 200 mg, 200 mg, 1000		3												1			1	
21	Mebendazole 100 mg, 100 mg, 1	1	3	4				1				1			1				1
22	Mebendazole 100 mg, 100 mg, 1000	2	2								1				1				
23	Methyldopa 250 mg, 250 mg, 1	1	5	2					1			1			1			1	
24	Multivitamin BP, BP, 1		4	5					1				1		1				1
25	Multivitamin BP, BP, 1000	3	2					1			1							1	

	Combined Description	Grand Total			Ashanti Region			Brong Ahafo Region			Central Region			Eastern Region			Greater Accra Region		
		Only Private	Only Public	Both	Only Private	Only Public	Both	Only Private	Only Public	Both	Only Private	Only Public	Both	Only Private	Only Public	Both	Only Private	Only Public	Both
26	Nifedipine 20 mg, 20 mg, 30	2	2	3									1						1
27	ORS Sachet, Sachet, 1		7	2					1			1			1			1	
28	Oxytocin 5 IU/ml, 1 ml, 1	2	5	2		1		1							1				1
29	Paracetamol Syrup 120 mg/5 ml, 1000, 1	2	5	2					1				1		1			1	
30	Paracetamol Syrup 120 mg/5 ml, 60 ml, 1		3												1				
31	Paracetamol 500 mg, 500 mg, 1		6	2					1			1			1			1	
32	Paracetamol 500 mg, 500 mg, 1000	3	2	1				1			1					1		1	
33	Procaine Penicillin 4 MU, 4 Mu, 1		8						1			1			1			1	
34	Thiopentone Sodium1 g, 1 g, 1		6	1								1			1				
35	Water for Injection 5 ml, 5 ml, 1		6	2					1			1			1			1	
	Sum	38	131	73	1	1	0	7	12	4	5	14	10	0	21	7	0	19	6

Table 4.3. Continued

		Upper East Region			Upper West Region			Volta Region			Western Region			Northern Region		
	Combined Description	Only Private	Only Public	Both	Only Private	Only Public	Both	Only Private	Only Public	Both	Only Private	Only Public	Both	Only Private	Only Public	Both
1	Aluminium Hydroxide 500 mg, 500 mg, 1		1			1		1				1				1
2	Aluminium Hydroxide 500 mg, 500 mg, 500														1	
3	Amoxycillin Suspension 125 mg/5 ml, 100 ml, 1		1			1				1			1			1
4	Amoxycillin Suspension 125 mg/5 ml, 60 ml, 1														1	
5	Anti Snake Bite Serum 100 ml, 10 ml, 1					1			1						1	
6	Benzyl Penicillin 600 mg (1 MU), 600 mg, 1			1		1		1				1				1
7	Chloramphenicol 250 mg, 250 mg, 1000	1				1		1					1			1
8	Chloroquine Base 150 mg, 150 mg, 1	1				1			1			1				1
9	Chloroquine Base 150mg, 150 mg, 1000														1	
10	Chloroquine Base 80 mg/ml, 80 mg/ml, 1000		1			1				1			1			1
11	Chloroquine 40 mg/ml, 5 ml, 1		1			1		1					1			1
12	Co-trimoxazole 240 mg, 100 ml, 1			1			1			1	1					1
13	Co-trimoxazole 240 mg, 60 ml, 1								1			1			1	
14	Dextrose 5% 500 ml, 500 ml, 1					1		1					1			1
15	Diazepam 5 mg/ml, 2 ml, 1	1					1	1			1					1
16	Ergometrine Maleate 500 mcg/ml, 2 ML, 1			1	1			1					1			1
17	Gentamicin 40 mg/ml, 2 ml, 1		1			1		1			1					1
18	Hydrocortisone Sodium Succinate 50 mg/ml, 2 ml, 1							1					1		1	
19	Ibuprofen 200 mg, 200 mg, 1		1			1			1			1				1
20	Ibuprofen 200 mg, 200 mg, 1000														1	
21	Mebendazole 100 mg, 100 mg, 1			1		1							1			1
22	Mebendazole 100 mg, 100 mg, 1000							1							1	
23	Methyldopa 250 mg, 250 mg, 1						1	1				1				1
24	Multivitamin BP, BP, 1			1		1			1				1			1
25	Multivitamin BP, BP, 1000							1							1	
26	Nifedipine 20 mg, 20 mg, 30			1	1				1		1				1	
27	ORS Sachet, Sachet, 1		1			1			1				1			1
28	Oxytocin5IU/ml1ml1		1			1		1				1				1

		Upper East Region			Upper West Region			Volta Region			Western Region			Northern Region		
	Combined Description	Only Private	Only Public	Both	Only Private	Only Public	Both	Only Private	Only Public	Both	Only Private	Only Public	Both	Only Private	Only Public	Both
29	Paracetamol Syrup 120 mg/5 ml, 1000, 1		1			1		1			1					1
30	Paracetamol Syrup 120 mg/5 ml, 60 ml, 1											1			1	
31	Paracetamol 500 mg, 500 mg, 1		1			1							1			1
32	Paracetamol 500 mg, 500 mg, 1000							1							1	
33	Procaine Penicillin 4 MU, 4 Mu, 1					1			1			1			1	
34	Thiopentone Sodium 1 g, 1 g, 1		1			1				1		1			1	
35	Water for Injection 5 ml, 5 ml, 1					1			1				1			1
	Sum	3	11	6	2	20	3	15	9	4	5	10	12	0	14	21

Table 4.4. Proportion of the Tracer Drugs Purchased by Public SDPs from either the Public or Private sector or both
(reference for Table 4.5. List of Tracer Drugs where majority of regions purchased predominantly from the Private Sector [% purchased all or partially from private sector])

		Grand Total			Ashanti Region			Brong Ahafo Region			Central Region		
0	combined description	Only Private	Only Public	Both	Only Private	Only Public	Both	Only Private	Only Public	Both	Only Private	Only Public	Both
1	Aluminium Hydroxide 500 mg, 500 mg, 1		4	4		1				1			1
2	Aluminium Hydroxide 500 mg, 500 mg, 1000		1						1				
3	Amoxycillin Suspension 125 mg/5 ml, 100 ml, 1		4	4		1				1		1	
4	Amoxycillin Suspension 125 mg/5 ml, 60 ml, 1		1						1				
5	Anti Snake Bite Serum 100 ml, 10 ml, 1		5			1			1				
6	Benzyl Penicillin 600 mg (1 MU), 600 mg, 1		3	5		1				1		1	
7	Chloramphenicol 25 0mg, 250 mg, 1000		5	3		1				1		1	
8	Chloroquine Base 150 mg, 150 mg, 1		5	3		1				1			1
9	Chloroquine Base 150 mg, 150 mg, 1000	1											
10	Chloroquine Base 80 mg/ml, 80 mg/ml, 1000		2	6		1				1			1
11	Chloroquine 40 mg/ml, 5 ml, 1		6	2		1				1		1	
12	Co-trimoxazole 240 mg, 100 ml, 1		5	3		1				1		1	
13	Co-trimoxazole 240 mg, 60 ml, 1		3			1			1				
14	Dextrose 5% 500 ml, 500 ml, 1		2	6		1				1			1
15	Diazepam 5 mg/ml, 2 ml, 1		6	2		1				1		1	
16	Ergometrine Maleate 500 mcg/ml, 2 ML, 1		4	4			1			1		1	
17	Gentamicin 40 mg/ml, 2 ml, 1	2	3	3			1	1			1		
18	Hydrocortisone Sodium Succinate 50 mg/ml, 2 ml, 1		3	4		1				1			1
19	Ibuprofen 200 mg, 200 mg, 1		6	2		1				1		1	
20	Ibuprofen 200 mg, 200 mg, 1000		2			1			1				
21	Mebendazole 100 mg, 100 mg, 1		7	1		1			1			1	
22	Mebendazole 100 mg, 100 mg, 1000	1											
23	Methyldopa 250 mg, 250 mg, 1		3	4			1			1			1
24	Multivitamin BP, BP, 1		6	2		1				1		1	
25	Multivitamin BP, BP, 1000		1						1				
26	Nifedipine 20 mg, 20 mg, 30	1	3	3		1							1

		Grand Total			Ashanti Region			Brong Ahafo Region			Central Region		
0	combined description	Only Private	Only Public	Both	Only Private	Only Public	Both	Only Private	Only Public	Both	Only Private	Only Public	Both
27	ORS Sachet, Sachet, 1		6	2		1				1		1	
28	Oxytocin 5 IU/ml, 1 ml, 1	1	4	3		1				1	1		
29	Paracetamol Syrup 120 mg/5 ml, 1000, 1		3	5		1				1		1	
30	Paracetamol Syrup 120 mg/5 ml, 60 ml, 1		2			1			1				
31	Paracetamol 500 mg, 500 mg, 1		4	4		1				1			1
32	Paracetamol 500 mg, 500 mg, 1000	1	1						1				
33	Procaine Penicillin 4 MU, 4 Mu, 1		7	1		1			1			1	
34	Thiopentone Sodium 1 g, 1 g, 1	1	4	2		1			1				1
35	Water for Injection 5 ml, 5 ml, 1		4	2		1			1				

Table 4.4. Continued

		Eastern Region			Greater Accra Region			Upper East Region			Upper West Region		
0	combined description	Only Private	Only Public	Both	Only Private	Only Public	Both	Only Private	Only Public	Both	Only Private	Only Public	Both
1	Aluminium Hydroxide 500 mg, 500 mg, 1			1		1			1			1	
2	Aluminium Hydroxide 500 mg, 500 mg, 1000												
3	Amoxycillin Suspension 125 mg/5 ml, 100 ml, 1		1				1		1				1
4	Amoxycillin Suspension 125 mg/5 ml, 60 ml, 1												
5	Anti Snake Bite Serum 100 ml, 10 ml, 1					1						1	
6	Benzyl Penicillin 600 mg (1 MU), 600 mg, 1			1			1		1				1
7	Chloramphenicol 250 mg, 250 mg, 1000		1				1		1			1	
8	Chloroquine Base 150 mg, 150 mg, 1		1			1			1			1	
9	Chloroquine Base 150 mg, 150 mg, 1000				1								
10	Chloroquine Base 80 mg/ml, 80 mg/ml, 1000			1			1		1				1
11	Chloroquine 40 mg/ml, 5 ml, 1		1			1			1			1	
12	Co-trimoxazole 240 mg, 100 ml, 1		1				1		1			1	
13	Co-trimoxazole 240 mg, 60 ml, 1		1										
14	Dextrose 5% 500 ml, 500 ml, 1			1			1		1				1
15	Diazepam 5 mg/ml, 2 ml, 1		1			1			1			1	
16	Ergometrine Maleate 500 mcg/ml, 2 ML, 1		1				1		1			1	
17	Gentamicin 40 mg/ml, 2 ml, 1		1			1			1				1
18	Hydrocortisone Sodium Succinate 50 mg/ml, 2 ml, 1		1				1					1	
19	Ibuprofen 200 mg, 200 mg, 1		1			1			1			1	
20	Ibuprofen 200 mg, 200 mg, 1000												
21	Mebendazole 100 mg, 100 mg, 1		1			1			1			1	
22	Mebendazole 100 mg, 100 mg, 1000				1								
23	Methyldopa 250 mg, 250 mg, 1		1			1						1	
24	Multivitamin BP, BP, 1		1			1			1			1	
25	Multivitamin BP, BP, 1000												
26	Nifedipine 20 mg, 20 mg, 30	1					1		1			1	

		Eastern Region			Greater Accra Region			Upper East Region			Upper West Region		
0	combined description	Only Private	Only Public	Both	Only Private	Only Public	Both	Only Private	Only Public	Both	Only Private	Only Public	Both
27	ORS Sachet, Sachet, 1		1			1			1			1	
28	Oxytocin 5 IU/ml, 1 ml, 1		1				1		1			1	
29	Paracetamol Syrup 120 mg/5 ml, 1000, 1			1			1		1				1
30	Paracetamol Syrup 120 mg/5 ml, 60 ml, 1												
31	Paracetamol 500 mg, 500 mg, 1		1			1			1				1
32	Paracetamol 500 mg, 500 mg, 1000				1								
33	Procaine Penicillin 4 Mu, 4 Mu, 1		1			1			1			1	
34	Thiopentone Sodium 1 g, 1 g, 1	1							1				1
35	Water for Injection 5 ml, 5 ml, 1		1			1							1

Table 4.7. Regional Comparisons of difference between prices paid to private and public suppliers

		Brong Ahafo Region			Central Region		
	combined description	Private	Public	%Difference	Private	Public	% Difference
1	Aluminium Hydroxide500mg500mg1	18.00		0.0		14.72	0.0
2	Aluminium Hydroxide500mg500mg500	9,090.00					
3	Amoxycillin Suspension125mg/5ml100ml1		1,584.00		4,000.00	1,423.20	181.1
4	Amoxycillin Suspension125mg/5ml60ml1						
5	Anti Snake Bite Serum100ml10ml1		15,000.00			15,000.00	
6	Benzyl Penicillin600mg(1MU)600mg1					1,035.25	
7	Chloramphenicol250mg250mg1000	75,000.00	61,300.00	22.3		74,150.00	
8	Chloroquine Base150mg150mg1		34.00			34.00	
9	Chloroquine Base150mg150mg1000				48,000.00		
10	Chloroquine Base80mg/ml80mg/ml1000		6,037.50		14,500.00	6,037.50	140.2
11	Chloroquine40mg/ml5ml1	559.40			660.00	550.53	19.9
12	Co-trimoxazole240mg100ml1	2,200.00	1,368.00	60.8	3,500.00	1,368.00	155.8
13	Co-trimoxazole240mg60ml1						
14	Dextrose 5%500ml500ml1	6,622.33	6,555.00	1.0	7,243.05		
15	Diazepam5mg/ml2ml1	1,300.00	992.00	31.0	1,500.00	920.00	63.0
16	Ergometrine Maleate500mcg/ml2ML1				1,716.25	1,782.50	-3.7
17	Gentamicin40mg/ml2ml1		787.75			787.75	
18	Hydrocortisone Sodium Succinate50mg/ml2ml1				4,200.00	3,335.00	25.9
19	Ibuprofen200mg200mg1					20.23	
20	Ibuprofen200mg200mg1000						
21	Mebendazole100mg100mg1	30.00				76.65	
22	Mebendazole100mg100mg1000				33,000.00		
23	Methyldopa250mg250mg1		369.75			369.75	
24	MultivitaminBPBP1		5.52		5.52	6.32	-12.6
25	MultivitaminBPBP1000	7,500.00			13,500.00		
26	Nifedipine20mg20mg30				8,700.00	13,455.00	-35.3
27	ORSSachetSachet1		428.60			426.60	
28	Oxytocin5IU/ml1ml1	750.00					
29	Paracetamol Syrup120mg/5ml10001		8,200.00		10,000.00	8,200.00	22.0
30	Paracetamol Syrup120mg/5ml60ml1						
31	Paracetamol500mg500mg1		14.34			14.27	
32	Paracetamol500mg500mg1000	16,000.00			17,500.00		
33	Procaine Penicillin4 MU4 Mu1		2,231.00			2,236.75	
34	Thiopentone Sodium1 g1 g1					8,625.00	
35	Water for Injection5ml5ml1		175.75			126.50	

Table 4.7. Regional Comparisons of difference between prices paid to private and public suppliers (continued)

		Eastern Region			Greater Accra Region		
				%			%
	combined description	Private	Public	Difference	Private	Public	Difference
1	Aluminium Hydroxide500mg500mg1		9.67	0.0	14.00	14.72	-4.9
2	Aluminium Hydroxide500mg500mg500						
3	Amoxycillin Suspension125mg/5ml100ml1		1,256.14		1,584.00	1,584.00	0.0
4	Amoxycillin Suspension125mg/5ml60ml1					1,584.00	
5	Anti Snake Bite Serum100ml10ml1		15,000.00			15,000.00	
6	Benzyl Penicillin600mg(1MU)600mg1		996.76			1,198.42	
7	Chloramphenicol250mg250mg1000	88,200.00	58,616.67	50.5		74,150.00	
8	Chloroquine Base150mg150mg1		34.67			32.00	
9	Chloroquine Base150mg150mg1000						
10	Chloroquine Base80mg/ml80mg/ml1000	10,670.00	6,037.50	76.7		6,037.50	
11	Chloroquine40mg/ml5ml1	580.00	381.88	51.9		598.00	
12	Co-trimoxazole240mg100ml1		1,212.88				
13	Co-trimoxazole240mg60ml1						
14	Dextrose 5%500ml500ml1	6,500.00	7,836.10	-17.1		7,579.88	
15	Diazepam5mg/ml2ml1	1,029.00	586.50			1,043.75	
16	Ergometrine Maleate500mcg/ml2ML1		1,483.13				
17	Gentamicin40mg/ml2ml1	650.00	920.00	-29.3		721.63	
18	Hydrocortisone Sodium Succinate50mg/ml2ml1						
19	Ibuprofen200mg200mg1		19.65				
20	Ibuprofen200mg200mg1000		20,460.00			21,390.00	
21	Mebendazole100mg100mg1		76.65		24.75	76.65	-67.7
22	Mebendazole100mg100mg1000		49,805.00				
23	Methyldopa250mg250mg1		450.00			289.50	
24	MultivitaminBPBP1		6.58		12.00	5.52	
25	MultivitaminBPBP1000					5,600.00	
26	Nifedipine20mg20mg30				3,346.67	395.20	746.8
27	ORSSachetSachet1		428.60			428.60	
28	Oxytocin5IU/ml1ml1		978.33		1,850.00	977.50	89.3
29	Paracetamol Syrup120mg/5ml10001		8,200.00			8,200.00	
30	Paracetamol Syrup120mg/5ml60ml1		2,400.00				
31	Paracetamol500mg500mg1		14.65			14.25	
32	Paracetamol500mg500mg1000	15,400.00	11,225.00	37.2		14,250.00	
33	Procaine Penicillin4 MU4 Mu1		2,239.63			2,236.75	
34	Thiopentone Sodium1 g1 g1		7,981.67				
35	Water for Injection5ml5ml1		288.25			126.50	

Figures 5.1. and 5.2. – RMS Margins by Drugs (0% implies no information), and by Region
(reference for **Table 4.7.** Regional Comparisons of differences in prices paid to Private and Public Suppliers)

		Ashanti Region				Brong Ahafo Region				Central Region				Eastern Region				Greater Accra Region			
	combined description	Private Purch.	Public Purch.	Sale Price	**% Diff.**	Private Purch.	Public Purch.	Sale Price	**% Diff.**	Private Purch.	Public Purch.	Sale Price	**% Diff.**	Private Purch.	Public Purch.	Sale Price	**% Diff.**	Private Purch.	Public Purch.	Sale Price	**% Diff.**
1	**Ten Tracer Drugs**																				
2	Amoxycillin Suspension 125 mg/5 ml, 100 ml, 1			3,083			1,584			4,000	1,423				1,256			1,584	1,584		
3	Chloramphenicol 250 mg, 250 mg100, 0	67,000		74,000	**10%**	75,000	61,300							88,200	58,617				74,150		
4	Chloroquine Base 80 mg/ml, 80 mg/ml, 1000						6,038	7,000	**16%**	14,500	6,038			10,670	6,038				6,038		
5	Co-trimoxazole 240 mg, 100 ml, 1			2,700		2,200	1,368			3,500	1,368				1,213						
6	Dextrose 5% 500 ml, 500 ml, 1			8,600		6,622	6,555	8,620	**31%**	7,243				6,500	7,836				7,580		
7	Ergometrine Maleate 500 mcg/ml, 2 ML, 1			2,660				1,754		1,716	1,783				1,483						
8	Gentamicin 40 mg/ml, 2 ml, 1			950			788	883	**12%**					650	920				722		
9	Multivitamin BP, BP, 1			9			6	8	**39%**	6	6				7			12	6		
10	ORS Sachet, Sachet, 1			574			429	475	**11%**						429				429		
11	Paracetamol Syrup 120 mg/5 ml, 1000, 1			1,900			8,200	8,763	**7%**	10,000	8,200				8,200				8,200		
12																					
13	**All Other Drugs**																				
14	Aluminium Hydroxide 500 mg, 500 mg, 1			15		18		19	**3%**						1,213						
15	Aluminium Hydroxide 500 mg, 500 mg, 500					9,090		#N/A													
16	Amoxycillin Suspension 125 mg/5 ml, 60 ml, 1							2,073						1,029	587				1,044		
17	Anti Snake Bite Serum 100 ml, 10 ml, 1			16,500			15,000	15,000	**0%**						1,483						
18	Benzyl Penicillin 600 mg (1 MU), 600mg, 1			1,364				1,348						650	920				722		

		Ashanti Region				Brong Ahafo Region				Central Region				Eastern Region				Greater Accra Region			
	combined description	Private Purch.	Public Purch.	Sale Price	% Diff.	Private Purch.	Public Purch.	Sale Price	% Diff.	Private Purch.	Public Purch.	Sale Price	% Diff.	Private Purch.	Public Purch.	Sale Price	% Diff.	Private Purch.	Public Purch.	Sale Price	% Diff.
19	Chloroquine Base 150 mg, 150 mg, 1			48			34	46	**36%**						20						
20	Chloroquine Base 150 mg 150, mg, 1000							7,000		48,000					20,460				21,390		
21	Chloroquine 40 mg/ml, 5 ml, 1			600		559		620	**11**	660	551				49,805						
22	Co-trimoxazole 240 mg, 60 ml, 1			2,625				2,457							7			12	6		
23	Diazepam 5 mg/ml, 2 ml, 1			2,165		1,300	992	1,000	**-13**	1,500	920							3,347	395		
24	Hydrocortisone Sodium Succinate 50 mg/ml, 2 ml, 1			4,040						4,200	3,335				8,200				8,200		
25	Ibuprofen 200 mg, 200 mg, 1			30				23							2,400						
26	Ibuprofen 200 mg, 200 mg, 1000			#N/A				#N/A							15				14		
27	Mebendazole 100 mg, 100 mg, 1			151		30		35	**17**					15,400	11,225				14,250		
28	Mebendazole 100 mg, 100 mg, 1000			#N/A				#N/A		33,000					2,240				2,237		
29	Methyldopa 250 mg, 250 mg, 1			500			370	698	**89**						7,982						
30	Multivitamin BP, BP, 1000			#N/A		7,500		#N/A		13,500											
31	Nifedipine 20 mg, 20 mg, 30			10,500				8,400		8,700	13,455										
32	Oxytocin 5 IU/ml, 1 ml, 1		1,093	1,700	**56**	750		1,760	**135**												
33	Paracetamol Syrup 120 mg/5 ml, 60 ml, 1			#N/A				#N/A													
34	Paracetamol 500 mg, 500 mg, 1			17			14	18	**23**												
35	Paracetamol 500 mg, 500 mg, 1000			#N/A		16,000		#N/A		17,500											
36	Procaine Penicillin 4 MU, 4 Mu, 1			2,590			2,231	2,953	**32**												
37	Thiopentone Sodium 1 g, 1 g, 1			8,500				9,540													
38	Water for Injection 5 ml, 5 ml, 1			198			176	495	**182**												
	Average Margin				33				37												

		Upper East Region				Upper West Region				Volta Region				Western Region				Norhern Region			
	combined description	Private Purch.	Public Purch.	Sale Price	% Diff.	Private Purch.	Public Purch.	Sale Price	% Diff.	Private Purch.	Public Purch.	Sale Price	% Diff.	Private Purch.	Public Purch.	Sale Price	% Diff.	Private Purch.	Public Purch.	Sale Price	% Diff.
1	**Ten Tracer Drugs**																				
2	Amoxycillin Suspension 125 mg/5 ml, 100 ml, 1		1,584	3,350	**111**		1,584	1,889	**19**	3,400	1,584			4,400	1,383	2,075	**-28**		1,584	3,163	**100**
3	Chloramphenicol 250 mg, 250 mg100, 0	61,680		80,000	**30**		74,150	80,525	**9**	67,000				82,635	61,300	81,500	**13**		61,300	74,680	**22**
4	Chloroquine Base 80 mg/ml, 80 mg/ml, 1000		6,038				6,038			9,813	6,037			9,500	6,038				6,038	14,950	**148**
5	Co-trimoxazole 240 mg, 100 ml, 1	2,243	1,368	2,300	**27**	1,795	1,368	1,703	**8**	2,700	1,368			3,800				2,750	1,368	3,148	**53**
6	Dextrose 5% 500 ml, 500 ml, 1			8,100			7,196	7,961	**11**	8,763				7,563	7,836	8,200	**7**	6,500	7,836	9,012	**26**
7	Ergometrine Maleate 500 mcg/ml, 2 ML, 1	1,540	1,783	1,950	**17**	1,375		1,536	**12**	273				1,800	1,360	1,950	**23**		1,783	2,050	**15**
8	Gentamicin 40 mg/ml, 2 ml, 1		656	1,058	**61**		788	870	**10**	623				775		900	**16**		656	1,058	**61**
9	Multivitamin BP, BP, 1	8	9	9	**7**		7	14	**99**		6	10	**85**	13	6	10	**6**	11	7	8	
10	ORS Sachet, Sachet, 1		429	600	**40**		429	476	**11**		429	501	**17**	667	428	585	**7**		429	493	**15**
11	Paracetamol Syrup 120 mg/5 ml, 1000, 1		8,200	7,860	**-4**		8,200	7,969	**-3**	8,100		8,910	**10**	8,200		9,200	**12**		8,200	9,890	**21**
12																					
13	**All Other Drugs**																				
14	Aluminium Hydroxide 500 mg, 500 mg, 1		5	19	**311**		5	5	**10**	11					15	26	**77**	20	5	650	
15	Aluminium Hydroxide 500 mg, 500 mg, 500							#N/A				#N/A								#N/A	
16	Amoxycillin Suspension 125 mg/5 ml, 60 ml, 1																				
17	Anti Snake Bite Serum 100 ml, 10 ml, 1						15,000	16,500	**10**		15,000					16,000				20,000	
18	Benzyl Penicillin 600 mg (1 MU), 600mg, 1	1,100	2,283	1,500	**-11**		901	1,103	**23**	1,015					1,424	1,050	**-26**	1,100	1,137	1,576	**41**
19	Chloroquine Base 150 mg, 150 mg, 1	36		50	**38**		35	42	**22**		36				35	45	**28**		36	54	**50**

		Upper East Region				Upper West Region				Volta Region				Western Region				Norhern Region			
	combined description	**Private Purch.**	**Public Purch.**	**Sale Price**	**% Diff.**	**Private Purch.**	**Public Purch.**	**Sale Price**	**% Diff.**	**Private Purch.**	**Public Purch.**	**Sale Price**	**% Diff.**	**Private Purch.**	**Public Purch.**	**Sale Price**	**% Diff.**	**Private Purch.**	**Public Purch.**	**Sale Price**	**% Diff.**
20	Chloroquine Base 150 mg 150, mg, 1000																				
21	Chloroquine 40 mg/ml, 5 ml, 1		456	700	**54**		456	501	**10**	568				558	598	630	**9**		408	688	**68**
22	Co-trimoxazole 240 mg, 60 ml, 1										1,368				1,161	2,000	**72**				
23	Diazepam 5 mg/ml, 2 ml, 1	985		1,100	**12**	1,100	920	12	**-99**	900				1,800		1,900	**6**		1,024	1,178	**15**
24	Hydrocortisone Sodium Succinate 50 mg/ml, 2 ml, 1									4,250				4,000	3,877					4,000	
25	Ibuprofen 200 mg, 200 mg, 1		21	30	**40**		21	24	**12**		21				20	38	**87**		21	25	**17**
26	Ibuprofen 200 mg, 200 mg, 1000															#N/A					
27	Mebendazole 100 mg, 100 mg, 1	22	23	50	**122**		50	84	**69**					77	50	58	**-10**		23	35	**54**
28	Mebendazole 100 mg, 100 mg, 1000									15,000						#N/A					
29	Methyldopa 250 mg, 250 mg, 1					495	450	509	**8**	500		610	**22**		290				450	456	**1**
30	Multivitamin BP, BP, 1000									7,500						#N/A					
31	Nifedipine 20 mg, 20 mg, 30	7,950	660	7,425	**72**	6,900					660	8,460		720		8,400				22,774	
32	Oxytocin 5 IU/ml, 1 ml, 1		921	1,430	**55**		921	1,060	**15**	910		1,300	**43**		921	1,125	**22**		921	1,125	**22**
33	Paracetamol Syrup 120 mg/5 ml, 60 ml, 1														2,400						
34	Paracetamol 500 mg, 500 mg, 1		15	15	**2**			70	**370**			16		19	15	17	**2**		15	17	**16**
35	Paracetamol 500 mg, 500 mg, 1000									14,333											
36	Procaine Penicillin 4 MU, 4 Mu, 1			1,900			2,237	2,665	**19**		,243	2,625	**17**		2,237					2,246	
37	Thiopentone Sodium 1 g, 1 g, 1		5,220	4,987	**-4**		8,625	10,078	**17**	12,000	6,520	9,487	**2**		7,500					6,125	
38	Water for Injection 5 ml, 5 ml, 1						65	72	**10**		450	72	**-84**	350	288				518	150	**-71**
	Average Margin				52				29				14				20				35

Table 5.7. SDP Margins by Region—Ashanti and Brong Ahafo

		Ashanti Region			% Difference	Brong Ahafo Region			% Difference
	combined description	Private	Public	Sale Price	Average	Private	Public	Sale Price	Average
1	Aluminium Hydroxide 500 mg, 500 mg, 1		21	25	**17%**	10	21	30	**96%**
2	Amoxycillin Suspension 125 mg/5 ml, 100 ml, 1		3,467	4,083	**18%**		4,800	3,793	**-21%**
3	Amoxycillin Suspension 125 mg/5 ml, 60 ml1							2,100	
4	Anti Snake Bite Serum 100 ml, 10 ml, 1		18,250	11,550	**-37%**			17,383	
5	Benzyl Penicillin 600 mg (1 MU), 600 mg, 1		1,419	1,717	**21%**		1,160	1,538	**33%**
6	Chloramphenicol 250 mg, 250 mg, 1000		79,000	96,667	**22%**	82,500	90,000	105,000	**22%**
7	Chloroquine Base 150 mg, 150 mg, 1		48	58	**21%**		60	61	**2%**
8	Chloroquine Base 150 mg, 150 mg, 1000							70,000	
9	Chloroquine Base 80mg/ml 80 mg/ml, 1000		10,500	13,500	**29%**		8,000	13,260	**66%**
10	Chloroquine 40 mg/ml, 5 ml, 1		580	687	**18%**		560	716	**28%**
11	Co-trimoxazole 240 mg, 100 ml, 1		2,850	3,653	**28%**		4,000	3,060	**-24%**
12	Co-trimoxazole 240 mg, 60 ml, 1		2,650	3,000	**13%**			2,732	
13	Dextrose 5% 500 ml, 500 ml, 1		9,043	10,740	**19%**		7,425	9,988	**35%**
14	Diazepam 5 mg/ml, 2 ml, 1		1,040	1,225	**18%**		1,160	1,403	**21%**
15	Ergometrine Maleate 500 mcg/ml, 2 ML, 1	2,650	2,800	3,070	**13%**		1,390	1,793	**29%**
16	Gentamicin 40 mg/ml, 2 ml, 1	1,000	918	1,124	**17%**		655	1,300	**98%**
17	Hydrocortisone Sodium Succinate 50 mg/ml, 2 ml, 1		4,100	4,710	**15%**		3,900	4,610	**18%**
18	Ibuprofen 200 mg, 200 mg, 1		32	38	**21%**		86	57	**-34%**
19	Ibuprofen 200 mg, 200 mg, 1000		32,000						
20	Mebendazole 100 mg, 100 mg, 1		53	69	**32%**			96	
21	Mebendazole 100 mg, 100 mg, 1000								
22	Methyldopa 250 mg, 250 mg, 1	350	500	500	**18%**		631	813	**29%**
23	Multivitamin BP, BP, 1		9	11			11	17	**61%**
24	Multivitamin BP, BP, 1000			10,000					
25	Nifedipine 20 mg, 20 mg, 30		10,500	12,000	**14%**			15,000	
26	ORS Sachet, Sachet, 1		550	651	**18%**		1,212	801	**-34%**
27	Oxytocin 5 IU/ml, 1 ml, 1		1,767	1,977	**12%**		1,445	1,773	**23%**
28	Paracetamol Syrup 120 mg/5 ml, 1000, 1		17,100	2,150			8,200	11,973	**46%**

		Ashanti Region			% Difference	Brong Ahafo Region			% Difference
	combined description	Private	Public	Sale Price	Average	Private	Public	Sale Price	Average
29	Paracetamol Syrup 120 mg/5 ml, 60 ml, 1		1,786						
30	Paracetamol 500 mg, 500 mg, 1		17	46			21	26	**22%**
31	Paracetamol 500 mg, 500 mg, 1000			20,000					
32	Procaine Penicillin 4 MU, 4 Mu, 1		2,750	2,881	**5%**			3,219	
33	Thiopentone Sodium 1 g, 1 g, 1		10,500	15,000	**43%**			12,500	
34	Water for Injection 5 ml, 5 ml, 1		283	294	**4%**			440	
					17%				**26%**

Table 5.7. SDP Margins by Region—Central and Eastern (continued)

		Central Region			% Difference	Eastern Region			% Difference
	combined description	Private	Public	Sale Price	Average	Private	Public	Sale Price	Average
1	Aluminium Hydroxide 500 mg, 500 mg, 1	40	23	23	**-27%**	10	18	20	**43%**
2	Amoxycillin Suspension 125 mg/5 ml, 100 ml, 1		3,350	3,867	**15%**		2,956	3,500	**18%**
3	Amoxycillin Suspension 125 mg/5 ml, 60 ml1								
4	Anti Snake Bite Serum 100 ml, 10 ml, 1								
5	Benzyl Penicillin 600 mg (1 MU), 600 mg, 1		1,825	1,567	**-14%**	1,859	952	1,633	**16%**
6	Chloramphenicol 250 mg, 250 mg, 1000		95,000	150,000	**58%**		101,000	110,000	**9%**
7	Chloroquine Base 150 mg, 150 mg, 1	33	52	80	**89%**		55	70	**28%**
8	Chloroquine Base 150 mg, 150 mg, 1000								
9	Chloroquine Base 80mg/ml 80 mg/ml, 1000	15,200	10,000	15,333	**22%**	20,000	12,000	19,667	**23%**
10	Chloroquine 40 mg/ml, 5 ml, 1		750	628	**-16%**		634	750	**18%**
11	Co-trimoxazole 240 mg, 100 ml, 1		3,250	4,100	**26%**		3,020	3,667	**21%**
12	Co-trimoxazole 240 mg, 60 ml, 1						2,840		
13	Dextrose 5% 500 ml, 500 ml, 1	6,500	8,200	9,167	**25%**	7,800	8,820	9,125	**10%**
14	Diazepam 5 mg/ml, 2 ml, 1		1,000	1,100	**10%**		1,254	1,375	**10%**
15	Ergometrine Maleate 500 mcg/ml, 2 ML, 1		800	1,750	**119%**		2,067	2,100	**2%**
16	Gentamicin 40 mg/ml, 2 ml, 1	775		1,000	**29%**		1,350	1,150	**-15%**
17	Hydrocortisone Sodium Succinate 50 mg/ml, 2 ml, 1	4,450	3,900	4,833	**16%**		4,217	4,500	**7%**
18	Ibuprofen 200 mg, 200 mg, 1		35	38	**10%**		31	45	**44%**
19	Ibuprofen 200 mg, 200 mg, 1000								
20	Mebendazole 100 mg, 100 mg, 1		80	92	**15%**		90	110	**22%**
21	Mebendazole 100 mg, 100 mg, 1000								
22	Methyldopa 250 mg, 250 mg, 1	600	480	800	**48%**		520	550	**6%**
23	Multivitamin BP, BP, 1		13	20	**54%**		15	140	
24	Multivitamin BP, BP, 1000								
25	Nifedipine 20 mg, 20 mg, 30	7,500	10,050	10,500	**20%**	8,250		10,500	**27%**
26	ORS Sachet, Sachet, 1		445	750	**69%**		494	725	**47%**
27	Oxytocin 5 IU/ml, 1 ml, 1	1,420		1,700	**20%**		1,485	1,600	**8%**
28	Paracetamol Syrup 120 mg/5 ml, 1000, 1		10,000	17,467	**75%**	22,000	10,300	17,000	**5%**

		Central Region			% Difference	Eastern Region			% Difference
	combined description	**Private**	**Public**	**Sale Price**	**Average**	**Private**	**Public**	**Sale Price**	**Average**
29	Paracetamol Syrup 120 mg/5 ml, 60 ml, 1								
30	Paracetamol 500 mg, 500 mg, 1	35	18	30	**13%**		18	23	**29%**
31	Paracetamol 500 mg, 500 mg, 1000								
32	Procaine Penicillin 4 MU, 4 Mu, 1		2,500	4,000	**60%**		3,162	3,350	**6%**
33	Thiopentone Sodium 1 g, 1 g, 1	10,500	5,220	12,600	**60%**	11,200		12,500	**12%**
34	Water for Injection 5 ml, 5 ml, 1			150			100	150	**50%**
					33%				**19%**

Table 5.7. SDP Margins by Region—Greater Accra and Upper East (continued)

		Greater Accra Region			% Difference	Upper East Region			% Difference
	combined description	Private	Public	Sale Price	Average	Private	Public	Sale Price	Average
1	Aluminium Hydroxide 500 mg, 500 mg, 1		22	40	82%	18	18	20	**11%**
2	Amoxycillin Suspension 125 mg/5 ml, 100 ml, 1	3,777	2,560	6,000	**89%**	3,525	3,525	3,925	**11%**
3	Amoxycillin Suspension 125 mg/5 ml, 60 ml, 1								
4	Anti Snake Bite Serum 100 ml, 10 ml, 1		16,500	20,000	**21%**				
5	Benzyl Penicillin 600 mg (1 MU), 600 mg, 1	1,100	1,669	2,000	**44%**	1,500	1,500	1,750	**17%**
6	Chloramphenicol 250 mg, 250 mg, 1000	70,000	83,473	225,000	**193%**	80,000	80,000	92,000	**15%**
7	Chloroquine Base 150 mg, 150 mg, 1		40	75	**85%**	50	50	61	**23%**
8	Chloroquine Base 150 mg, 150 mg, 1000	43,000							
9	Chloroquine Base 80 mg/ml, 80 mg/ml, 1000	10,500	7,370	20,000	**124%**	6,900	6,900	11,300	**64%**
10	Chloroquine 40 mg/ml, 5 ml, 1		619	1,000	**62%**	700	700	767	**10%**
11	Co-trimoxazole 240 mg, 100 ml, 1	2,925	2,017	6,000	**143%**	2,888	2,888	3,075	**6%**
12	Co-trimoxazole 240 mg, 60 ml, 1								
13	Dextrose 5% 500 ml, 500 ml, 1	6,600	8,615	10,500	**38%**	8,550	8,550	8,975	**5%**
14	Diazepam 5 mg/ml, 2 ml, 1		1,126	1,750	**55%**	917	917	900	**-2%**
15	Ergometrine Maleate 500 mcg/ml, 2 ML, 1	2,000	1,843	1,500		1,900	1,900	2,075	**9%**
16	Gentamicin 40 mg/ml, 2 ml, 1		1,012	1,750	**73%**	1,058	1,058	1,250	**18%**
17	Hydrocortisone Sodium Succinate 50 mg/ml, 2 ml, 1	4,260	3,669	5,000	**26%**			4,600	
18	Ibuprofen 200 mg, 200 mg, 1		24	100	[redacted]	30	30	42	**39%**
19	Ibuprofen 200 mg, 200 mg, 1000			100	s				
20	Mebendazole 100 mg, 100 mg, 1		85	320	**276%**	88	88	100	**14%**
21	Mebendazole 100 mg, 100 mg, 1000	39,333							
22	Methyldopa 250 mg, 250 mg, 1		318					227	
23	Multivitamin BP, BP, 1		9	27	**207%**	9	9	14	**56%**
24	Multivitamin BP, BP, 1000								
25	Nifedipine 20 mg, 20 mg, 30	23,775	21,248	27,000	**20%**	7,740	7,740	8,150	**5%**
26	ORS Sachet, Sachet, 1		472	750	**59%**	650	650	640	**-2%**
27	Oxytocin 5 IU/ml, 1 ml, 1	1,400	1,075	2,000	**62%**	1,260	1,260	1,887	**50%**

		Greater Accra Region			% Difference	Upper East Region			% Difference
	combined description	Private	Public	Sale Price	Average	Private	Public	Sale Price	Average
28	Paracetamol Syrup 120 mg/5 ml, 1000, 1	9,500	9,020	20,000	**116%**	7,989	7,989	11,200	**40%**
29	Paracetamol Syrup 120 mg/5 ml, 60 ml, 1							1,000	
30	Paracetamol 500 mg, 500 mg, 1		16	25	**54%**	15	15	21	**38%**
31	Paracetamol 500 mg, 500 mg, 1000	16,000							
32	Procaine Penicillin 4 MU, 4 Mu, 1		2,460			2,500	2,500	2,638	**6%**
33	Thiopentone Sodium 1 g, 1 g, 1					4,232	4,232	4,400	**4%**
34	Water for Injection 5 ml, 5 ml, 1		140	200	**43%**			500	
					100%				**20%**

Table 5.7. SDP Margins by Region—Upper West and Northern (continued)

		Upper West Region			% Difference	Northern Region			% Difference
	combined description	Private	Public	Sale Price	Average	Private	Public	Sale Price	Average
1	Aluminium Hydroxide 500 mg, 500 mg, 1		6	14	**135%**	22	19	26	**27%**
2	Amoxycillin Suspension 125 mg/5 ml, 100 ml, 1	4,200	1,845	2,891	**-4%**	4,134	3,098	4,800	**33%**
3	Amoxycillin Suspension 125 mg/5 ml, 60 ml, 1								
4	Anti Snake Bite Serum 100 ml, 10 ml, 1		16,500	18,975	**15%**		20,000	16,995	**-15%**
5	Benzyl Penicillin 600 mg (1 MU), 600 mg, 1	1,300	983	1,017	**-11%**	1,294	1,370	1,733	**30%**
6	Chloramphenicol 250 mg, 250 mg, 1000		80,475	84,160	**5%**	85,150	71,250	89,286	**14%**
7	Chloroquine Base 150 mg, 150 mg, 1		42	55	**32%**	44	46	62	**37%**
8	Chloroquine Base 150 mg, 150 mg, 1000								
9	Chloroquine Base 80 mg/ml, 80 mg/ml, 1000	11,700	7,045	10,003	**7%**	7,963	10,933	19,325	**105%**
10	Chloroquine 40 mg/ml, 5 ml, 1		449	473	**5%**	481	632	936	**68%**
11	Co-trimoxazole 240 mg, 100 ml, 1		1,674	1,586	**-5%**	3,236	2,470	4,087	**43%**
12	Co-trimoxazole 240 mg, 60 ml, 1								
13	Dextrose 5% 500 ml, 500 ml, 1	6,670	7,741	8,089	**12%**	7,411	8,281	10,179	**30%**
14	Diazepam 5 mg/ml, 2 ml, 1		1,640	1,383	**-16%**	1,005	1,111	1,513	**43%**
15	Ergometrine Maleate 500 mcg/ml, 2 ML, 1		1,537	1,610	**5%**	1,847	1,801	2,314	**27%**
16	Gentamicin 40 mg/ml, 2 ml, 1	635	823	2,174	**198%**	774	976	1,190	**36%**
17	Hydrocortisone Sodium Succinate 50 mg/ml, 2 ml, 1		4,909	5,670	**16%**	3,694	4,022	5,088	**32%**
18	Ibuprofen 200 mg, 200 mg, 1		24	37	**54%**	31	24	42	**53%**
19	Ibuprofen 200 mg, 200 mg, 1000								
20	Mebendazole 100 mg, 100 mg, 1		45	51	**13%**	79	64	54	**-24%**
21	Mebendazole 100 mg, 100 mg, 1000								
22	Methyldopa 250 mg, 250 mg, 1		509	666	**31%**	700	393	644	**18%**
23	Multivitamin BP, BP, 1		13	10	**-21%**	10	8	22	**150%**
24	Multivitamin BP, BP, 1000								
25	Nifedipine 20 mg, 20 mg, 30		14,541	14,468	**-1%**	19,290	22,774	24,193	**15%**
26	ORS Sachet, Sachet, 1		477	568	**19%**	605	494	746	**36%**
27	Oxytocin 5 IU/ml, 1 ml, 1		1,060	1,163	**10%**	1,280	1,170	1,892	**54%**

		Upper West Region			% Difference	Northern Region			% Difference
	combined description	Private	Public	Sale Price	Average	Private	Public	Sale Price	Average
28	Paracetamol Syrup 120 mg/5 ml, 1000, 1	12,300	9,262	11,699	**9%**	8,658	9,516	16,343	**80%**
29	Paracetamol Syrup 120 mg/5 ml, 60 ml, 1								
30	Paracetamol 500 mg, 500 mg, 1	18	17	22	**28%**	18	17	32	**83%**
31	Paracetamol 500 mg, 500 mg, 1000								
32	Procaine Penicillin 4 MU, 4 Mu, 1		2,665	2,763	**4%**	3,064	2,253	3,100	**17%**
33	Thiopentone Sodium 1 g, 1 g, 1	3,000	10,078				8,620	16,100	**87%**
34	Water for Injection 5 ml, 5 ml, 1	310	72	200	**5%**	290	133	230	**9%**
					22%				**42%**

Table 5.8. Average SDP Sales Prices by Region

	combined description	Ashanti Region	Brong Ahafo Region	Central Region	Eastern Region
	Aluminium Hydroxide 500 mg, 500 mg, 1	24.53	29.92	22.67	20.00
1	Amoxycillin Suspension 125 mg/5 ml, 100 ml, 1	4,082.50	3,792.50	3,866.67	3,500.00
2	Amoxycillin Suspension 125 mg/5 ml, 60 ml, 1		2,100.00		
3	Anti Snake Bite Serum 100 ml, 10 ml, 1	11,550.00	17,383.33		
4	Benzyl Penicillin 600 mg (1 MU), 600 mg, 1	1,716.83	1,537.67	1,566.67	1,633.33
5	Chloramphenicol 250 mg, 250 mg, 1000	96,666.67	105,000.00	150,000.00	110,000.00
6	Chloroquine Base 150 mg, 150 mg, 1	58.31	61.31	80.00	70.00
7	Chloroquine Base 150 mg, 150 mg, 1000		70,000.00		
8	Chloroquine Base 80 mg/ml, 80 mg/ml, 1000	13,500.00	13,260.00	15,333.33	19,666.67
9	Chloroquine 40 mg/ml, 5 ml, 1	686.67	716.25	627.50	750.00
10	Co-trimoxazole 240 mg, 100 ml, 1	3,653.33	3,060.00	4,100.00	3,666.67
11	Co-trimoxazole 240 mg, 60 ml, 1	3,000.00	2,731.50		
12	Dextrose 5% 500 ml, 500 ml, 1	10,740.00	9,987.50	9,166.67	9,125.00
13	Diazepam 5 mg/ml, 2 ml, 1	1,225.00	1,402.50	1,100.00	1,375.00
14	Diazepam 5 mg/ml, 2 ml, 100		200,000.00		
15	Ergometrine Maleate 500 mcg/ml, 2 ML, 1	3,070.00	1,793.33	1,750.00	2,100.00
16	Gentamicin 40,mg/ml, 2 ml, 1	1,123.75	1,300.00	1,000.00	1,150.00
17	Hydrocortisone Sodium Succinate 50 mg/ml, 2 ml, 1	4,710.00	4,610.00	4,833.33	4,500.00
18	Ibuprofen 200 mg, 200 mg, 1	38.33	56.56	38.33	45.00
19	Ibuprofen 200 mg, 200 mg, 1000				
20	Mebendazole 100 mg, 100 mg, 1	69.32	95.88	91.67	110.00
21	Methyldopa 250 mg, 250 mg, 1	500.00	813.00	800.00	550.00
22	Multivitamin BP, BP, 1	11.25	16.94	20.00	140.00
23	Multivitamin BP, BP, 1000	10,000.00			
24	Nifedipine 20 mg, 20 mg, 30	12,000.00	15,000.00	10,500.00	10,500.00
25	ORS Sachet, Sachet, 1	651.25	801.25	750.00	725.00
26	Oxytocin 5 IU/ml, 1 ml, 1	1,976.67	1,772.50	1,700.00	1,600.00
27	Paracetamol Syrup 120 mg/5 ml, 1000, 1	2,150.00	11,973.33	17,466.67	17,000.00

	combined description	Ashanti Region	Brong Ahafo Region	Central Region	Eastern Region
28	Paracetamol Syrup 120 mg/5 ml, 60 ml, 1				
29	Paracetamol 500 mg, 500 mg, 1	4,615.85	25.61	30.00	23.33
30	Paracetamol 500 mg, 500 mg, 1000	20,000.00			
31	Procaine Penicillin 4 MU, 4 Mu, 1	2,881.25	3,218.75	4,000.00	3,350.00
32	Thiopentone Sodium 1 g, 1 g, 1	15,000.00	12,500.00	12,600.00	12,500.00
33	Water for Injection 5 ml, 5ml, 1	293.75	440.00	150.00	150.00
34	Chloroquine Base 80 mg/ml, 80 mg/ml, 100	2,000.00			
35	Condom (male)111	1,016.67	1,262.50		40.00
36	Injectable (Depo Provera)1	1,166.67	1,000.00		1,000.00
37	Low Dosage Pill cycle, cycle, 1	466.67	150.00		150.00
38	Methyldopa 250 mg, 250 mg, 1000			600.00	

	combined description	Greater Accra Region	Upper East Region	Upper West Region	Northern Region	Grand Total
	Aluminium Hydroxide 500 mg, 500 mg, 1	40.00	20.00	13.54	25.83	24.24
1	Amoxycillin Suspension 125 mg/5 ml, 100 ml, 1	6,000.00	3,925.00	2,891.27	4,800.00	4,035.79
2	Amoxycillin Suspension 125 mg/5 ml, 60 ml, 1					2,100.00
3	Anti Snake Bite Serum 100 ml, 10 ml, 1	20,000.00		18,975.00	16,995.00	16,408.93
4	Benzyl Penicillin 600 mg (1 MU), 600 mg, 1	2,000.00	1,750.00	1,016.85	1,733.38	1,638.49
5	Chloramphenicol 250 mg, 250 mg, 1000	225,000.00	92,000.00	84,160.00	89,285.71	109,281.54
6	Chloroquine Base 150 mg, 150 mg, 1	75.00	61.25	55.49	61.63	62.86
7	Chloroquine Base 150 mg, 150 mg, 1000					70,000.00
8	Chloroquine Base 80 mg/ml, 80 mg/ml, 1000	20,000.00	11,300.00	10,002.88	19,325.00	15,864.95
9	Chloroquine 40 mg/ml, 5 ml, 1	1,000.00	766.67	473.45	935.71	756.85
10	Co-trimoxazole 240 mg, 100 ml, 1	6,000.00	3,075.00	1,585.80	4,087.44	3,676.10
11	Co-trimoxazole 240 mg, 60 ml, 1					2,821.00
12	Dextrose 5% 500 ml, 500 ml, 1	10,500.00	8,975.00	8,088.79	10,178.57	9,655.69
13	Diazepam 5 mg/ml, 2 ml, 1	1,750.00	900.00	1,382.51	1,512.50	1,345.83
14	Diazepam 5 mg/ml, 2 ml, 100					200,000.00
15	Ergometrine Maleate 500 mcg/ml, 2 ML, 1	1,500.00	2,075.00	1,610.00	2,314.29	2,180.00
16	Gentamicin 40,mg/ml, 2 ml, 1	1,750.00	1,250.00	2,174.35	1,189.67	1,350.26
17	Hydrocortisone Sodium Succinate 50 mg/ml, 2 ml, 1	5,000.00	4,600.00	5,670.42	5,087.50	4,908.03
18	Ibuprofen 200 mg, 200 mg, 1	100.00	41.67	36.86	42.38	45.21
19	Ibuprofen 200 mg, 200 mg, 1000	100.00				00.00
20	Mebendazole 100 mg, 100 mg, 1	320.00	100.00	50.90	54.43	85.69
21	Methyldopa 250 mg, 250 mg, 1		226.67	666.00	644.00	555.59
22	Multivitamin BP, BP, 1	26.50	13.50	9.98	21.75	33.02
23	Multivitamin BP, BP, 1000					10,000.00
24	Nifedipine 20 mg, 20 mg, 30	27,000.00	8,150.00	14,467.50	24,192.86	17,106.43
25	ORS Sachet, Sachet, 1	750.00	640.00	568.09	746.25	709.20
26	Oxytocin 5 IU/ml, 1 ml, 1	2,000.00	1,886.67	1,163.17	1,892.14	1,756.58
27	Paracetamol Syrup 120 mg/5 ml, 1000, 1	20,000.00	11,200.00	11,698.53	16,342.86	13,989.06

	combined description	Greater Accra Region	Upper East Region	Upper West Region	Northern Region	Grand Total
28	Paracetamol Syrup 120 mg/5 ml, 60 ml, 1		1,000.00			1,000.00
29	Paracetamol 500 mg, 500 mg, 1	25.00	20.75	21.96	32.14	701.25
30	Paracetamol 500 mg, 500 mg, 1000					20,000.00
31	Procaine Penicillin 4 MU, 4 Mu, 1		2,637.50	2,763.33	3,100.00	3,011.43
32	Thiopentone Sodium 1 g, 1 g, 1		4,400.00		16,100.00	11,388.89
33	Water for Injection 5 ml, 5ml, 1	200.00	500.00	200.00	230.17	272.71
34	Chloroquine Base 80 mg/ml, 80 mg/ml, 100		1,000.00			1,500.00
35	Condom (male)111	25.00	25.00		25.00	523.18
36	Injectable (Depo Provera)1	1,000.00	1,000.00		1,000.00	1,055.56
37	Low Dosage Pill cycle, cycle, 1	500.00	150.00		150.00	280.00
38	Methyldopa 250 mg, 250 mg, 1000					600.00

Table 5.9. Average Public SDP Purchase Prices

			Ashanti Region	Brong Ahafo Region	Central Region	Eastern Region	Greater Accra Region	Upper East Region	Upper West Region	Northern Region
0		Average	Public	Public	Public	Public	Public	Public	Public	Public
1	Aluminium Hydroxide 500 mg, 500 mg, 1	18.3	21.0	20.5	22.5	18.0	22.0	18.0	5.8	18.6
2	Aluminium Hydroxide 500 mg, 500 mg, 1000	16,750.0		16,750.0						
3	Amoxycillin Suspension 125 mg/5 ml, 100 ml, 1	2,778.9	3,466.7	1,430.0	3,350.0	2,955.8	2,559.8	3,525.0	1,845.3	3,098.4
4	Amoxycillin Suspension 125mg/5 ml, 60 ml, 1	2,017.6		2,017.6						
5	Anti Snake Bite Serum 100 ml, 10 ml, 1	17,280.0	18,250.0	15,150.0			16,500.0		16,500.0	20,000.0
6	Benzyl Penicillin 600 mg (1 MU), 600 mg, 1	1,381.7	1,418.6	1,335.7	1,825.0	952.0	1,669.3	1,500.0	982.8	1,370.0
7	Chloramphenicol 250 mg, 250 mg, 1000	83,587.3	79,000.0	78,500.0	95,000.0	101,000.0	83,473.3	80,000.0	80,475.0	71,250.0
8	Chloroquine Base 150 mg, 150 mg, 1	47.3	48.4	44.8	52.0	54.7	40.4	50.0	41.9	46.0
9	Chloroquine Base 150 mg, 150 mg, 1000									
10	Chloroquine Base 80 mg/ml, 80 mg/ml, 1000	9,115.5	10,500.0	8,175.0	10,000.0	12,000.0	7,370.0	6,900.0	7,045.5	10,933.5
11	Chloroquine 40 mg/ml, 5 ml, 1	625.7	580.0	641.7	750.0	634.0	619.0	700.0	448.9	631.8
12	Co-trimoxazole 240 mg, 100 ml, 1	2,618.6	2,850.0	2,780.0	3,250.0	3,020.0	2,017.0	2,887.5	1,674.2	2,469.9
13	Co-trimoxazole 240 mg, 60 ml, 1	2,586.1	2,650.0	2,268.3		2,840.0				
14	Dextrose 5% 500 ml, 500 ml, 1	8,496.7	9,042.9	8,724.5	8,200.0	8,820.0	8,614.9	8,550.0	7,740.8	8,281.0
15	Diazepam 5 mg/ml, 2 ml, 1	1,144.0	1,040.0	1,065.0	1,000.0	1,254.0	1,125.9	916.7	1,639.9	1,110.8
16	Ergometrine Maleate 500 mcg/ml, 2 ML, 1	1,769.6	2,800.0	1,409.0	800.0	2,066.7	1,842.5	1,900.0	1,537.5	1,801.5
17	Gentamicin 40 mg/ml, 2 ml, 1	1,022.8	918.3			1,350.0	1,012.0	1,058.0	822.9	975.6
18	Hydrocortisone Sodium Succinate 50 mg/ml, 2 ml, 1	4,115.8	4,100.0	3,994.3	3,900.0	4,216.7	3,669.0		4,909.2	4,021.7
19	Ibuprofen 200 mg, 200 mg, 1	28.4	31.8	27.5	35.0	31.3	23.5	30.0	24.0	23.9
20	Ibuprofen 200 mg, 200 mg, 1000	27,506.3	32,000.0	23,012.5						
21	Mebendazole 100 mg, 100 mg, 1	70.2	52.6	57.6	80.0	90.0	85.0	88.0	44.9	63.8
22	Mebendazole 100 mg, 100 mg, 1000									
23	Methyldopa 250 mg, 250 mg, 1	442.1	500.0	375.0	480.0	520.0	318.5		508.8	392.7
24	Multivitamin BP, BP, 1	10.4	9.0	8.0	13.0	15.3	8.6	8.7	12.6	7.9
25	Multivitamin BP, BP, 1000	7,766.7		7,766.7						
26	Nifedipine 20 mg, 20 mg, 30	14,475.4	10,500.0		10,050.0		21,248.0	7,740.0	14,541.0	22,773.6

			Ashanti Region	Brong Ahafo Region	Central Region	Eastern Region	Greater Accra Region	Upper East Region	Upper West Region	Northern Region
0		Average	Public	Public	Public	Public	Public	Public	Public	Public
27	ORS Sachet, Sachet, 1	507.5	550.0	478.3	444.7	493.8	472.0	650.0	477.4	494.0
28	Oxytocin 5 IU/ml, 1 ml, 1	1,306.0	1,766.7	1,324.8		1,485.3	1,075.3	1,260.0	1,060.2	1,169.8
29	Paracetamol Syrup 120 mg/5 ml, 1000, 1	10,229.6	17,100.0	8,650.0	10,000.0	10,300.0	9,020.0	7,988.9	9,262.1	9,515.7
30	Paracetamol Syrup 120 mg/5 ml, 60 ml, 1	1,852.9	1,785.7	1,920.0						
31	Paracetamol 500 mg, 500 mg, 1	17.0	16.9	17.7	18.0	18.1	16.2	15.0	16.7	17.1
32	Paracetamol 500 mg, 500 mg, 1000	17,525.0		17,525.0						
33	Procaine Penicillin 4 MU, 4 Mu, 1	2,609.3	2,750.0	2,583.3	2,500.0	3,162.0	2,460.4	2,500.0	2,664.9	2,253.4
34	Thiopentone Sodium 1 g, 1 g, 1	8,021.6	10,500.0	9,480.0	5,220.0			4,232.0	10,077.8	8,620.0
35	Water for Injection 5 ml, 5 ml, 1	160.5	283.3	235.0		100.0	140.0		71.9	132.6

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